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ABSTRACT

This bibliography features a compilation of textbooks, curricular materials, and other marine education resource materials developed by individual Sea Grant programs throughout the Unites States. The listing is intended to be used as a tool for teachers and other individuals interested in helping students explore and understand our oceans and Great Lakes. (WRM)

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MARINE EDUCATION

A Bibliography of Educational Materials Available from the Nation's Sea Grant College Programs

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Fifth Edition

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MARINE EDUCATION

A Bibliography of Educational Materials Available from the Nation's Sea Grant College Programs

DECEMBER 1997

Production costs were supported in part by Grant NA56RG0388 to the Texas Sea Grant College Program by the National Oceanic and Atmospheric Administration, National Sea Grant College Program, U.S. Department of Commerce.

This bibliography was first published as result of a cooperative educational effort of the nation's Sea Grant programs and the staff of The Living Seas pavilion presented by United Technologies at EPCOT center in Orlando, Florida. A compilation of the textbooks, curricula materials and other marine education resource materials developed by individual Sea Grant programs, the original publication was intended for use with the education program of The Living Seas and in the EPCOT Outreach/Teachers' Center.

This cooperative effort was a natural outgrowth of the intersecting missions of Sea Grant, The Living Seas and the EPCOT Outreach/Teachers' Center. When Congress established the National Sea Grant College Program in 1966, Sea Grant was given the mission of promoting the understanding and wise use of our oceans and Great Lakes through research, education and public service. The materials included in this bibliography are evidence of Sea Grant's meeting that Congressional mandate for formal and public education.

The Marine Education Bibliography has proven useful to a wide range of educators, and demand has far exceeded supply. This fifth printing ensures that the bibliography is again available as a tool for teachers and other individuals interested in helping students explore and understand our oceans and Great Lakes.

The materials outlined in this bibliography are available from the Sea Grant program or institution that developed them. Entries include ordering instructions and information about materials available free or at a nominal cost.

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Alaska Sea Grant College Program

University of Alaska Fairbanks
P.O. Box 755040-MEB
Fairbanks, AK 99775-5040
(907) 474-6707

SEA WEEK CURRICULUM SERIES

The Alaska Sea Week program has been cited for excellence in environmental education by the National Science Teachers' Association. The hundreds of teachers who have used these curriculum guides find Sea Week the highlight of the year—a week of delight and awe, intrigue and excitement. These six books can easily be adapted to several grade levels and even to adult education.

Discovery: An Introduction. Kindergarten. Belle Mickelson. **AK-SG-83-06.** 1983. 106 pp. + worksheets. $6.50. This book leads the teacher through more than 30 activities. While children are learning about wetlands, the ocean, marine and shore animals and seaweed, they discover science, mathematics, language, history, social studies, art and music.

Animals of the Seas and Wetlands. Grade 1. Belle Mickelson. **AK-SG-85-11.** 1985. 154 pp. + worksheets. $12.00. This book has units on marine and freshwater invertebrates, fish, amphibians, marine and freshwater mammals and beach field trips. The text includes background information for teachers, suggested classroom activities and discussion topics.

Shells and Insects. Grade 2. Claudia Kelsey, Mary Beth Parsons, and Margaret Cowan. **AK-SG-84-04.** 1984. 169 pp. + worksheets. $12.50. Activities are paired with worksheets that use language arts, arithmetic, art and other topics to increase the student's awareness of marine and wetland areas in the community. This volume concentrates on mollusks, bivalves, univalves, chitons, cephalopods, shellfish and freshwater field trips, water invertebrates and insects.

Birds and Wetlands of Alaska. Grade 4. James G. King and Mary Lou King. **AK-SG-88-01.** 1988. 84 pp. + worksheets and field guide. $12.00. Kids will learn about bird habitats, migration, parts of a bird, and how to identify birds. Teachers do not need to be experts to use these materials, and no additional materials are required.

Fish and Fisheries. Grade 5. Belle Mickelson and Nancy Barr. **AK-SG-83-07.** 1983. 172 pp.+ worksheets. $11.50. This guide has games and activities that help teach youngsters about the biology of fish, and about the fish species that are harvested. Other units take the children out to study the natural habitat. Fishing techniques, fish processing, and the history and future of the fisheries are also introduced to the students through classroom activities, readings and individual worksheets.

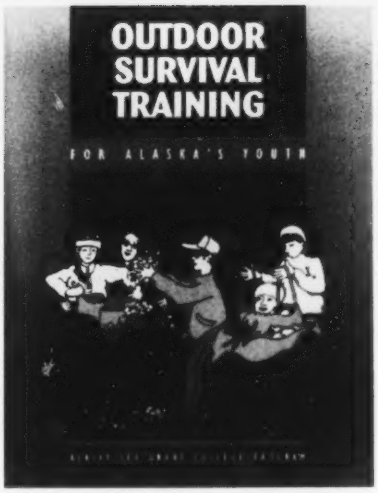
Marine Mammals: Coastal and River Issues. Grade 6. Belle Mickelson. **AK-SG-84-08.** 1984. 186 pp. + worksheets. $12.50. This volume concentrates on marine mammals in Alaska and also introduces a broad range of marine and wetland topics to students, including community planning, weather, pollution, oil development and the connections among logging, fishing and wildlife.

OUTDOOR SURVIVAL SERIES FOR NEW READERS

Cold Can Kill: Hypothermia. Grade 4. Christine Betz Hall. **SG-ED-23.** 1994. 20 pp. $3.00. The audience for this book is new adult readers and children reading at a fourth-grade level. All the details about hypothermia are included in this illustrated book—causes of hypothermia, how the body loses heat, how to diagnose hypothermia, how to prevent it and how to treat victims of hypothermia. Warnings against alcohol use are included.

Cold Hurts: Frostbite, Frostnip, and Immersion Foot. Grade 4. Christine Betz Hall. **SG-ED-27.** 1995. 24 pp. $3.00. This illustrated book for new adult readers and children has information about dangerous cold-weather injuries. The reader is told when and how to thaw frostbite, and how to take care of an injury until it heals. The emphasis is on being prepared for exposure to cold, wearing warm clothes to prevent injury and looking for signs that a body part is getting too cold.

Dressing for Cold. Grade 4. Christine Betz Hall. **SG-ED-28.** 1996. 32 pp. $3.00. Body heat basics, how to wear layers, and dressing kids for cold are addressed in this illustrated book for new adult readers and children. Learn how to select clothing for sedentary activities, for exertion in the cold, and for wet weather. Insulation properties of different materials are discussed, as well as styles for hats, mittens, and boots. Useful in northern areas, for temperatures and wind chill to –50°F.



OUTDOOR SURVIVAL CURRICULUM

Outdoor Survival Training for Alaska's Youth: Instructor Manual. For Teachers and Adults. Dolly Garza. **SG-ED-16.** 1993. 108 pp. $8.00.

Outdoor Survival Training for Alaska's Youth: Student Manual. Grades 5-7. Dolly Garza. **SG-ED-17.** 1993. 46 pp. Free only with purchase of teacher manual.
This well illustrated, two-volume curriculum set has classroom and field activities aimed at teaching elementary school children how to prepare for and cope with outdoor emergencies. The emphasis is on the equipment, skills and mental outlook needed to survive when lost or stranded in the outdoors. The presentation is based on case studies in Alaska, but the information is relevant to any temperate geographic region. The materials are geared to grades 5-7, but have been used successfully in grades K-12. One free student manual for each participating student will be included with order. Teachers should specify number of youngsters in class.

IDENTIFICATION GUIDES

Guide to Marine Mammals of Alaska. Grades 7-12. Kate Wynne. **MAB-44.** 2nd Edition 1997. 80 pp. $20.00.
Guide to Marine Mammals of Alaska covers all 29 species of marine mammals of Alaska. Each whale, porpoise, dolphin, seal, sea lion, walrus, sea otter and polar bear is described and illustrated. Color photos and surface profiles are included, and color range maps show distribution. Descriptions are presented in a format that allows fast, accurate identification at sea. The book is printed on durable waterproof paper to give years of service outdoors and in the office, classroom and home.

Guide to Northeast Pacific Rockfishes: Genera Sebastes and Sebastolobus. Grades 7-12. **MAB-25.** Revised 1995. 86 pp. $15.00.
This plastic laminated guide simplifies the identification of 36 species of rockfish found along the Alaska and British Columbia coast, with color photographs for each species. It is particularly useful for fishermen, processors, fisheries managers and divers.

Guide to Northeast Pacific Flatfishes. Grades 7-12. Donald E. Kramer, William H. Barss, Brian C. Paust, and Barry E. Bracken. Illustrated by Terry Josey. **MAB-47.** 1995. 112 pp. $20.00.
This guide makes it easy to identify all 39 species of flatfishes in the northeast Pacific. Each fish is illustrated with a line drawing and color photos of eyed and blind sides. Descriptions, value and range are given, as well as a glossary and references. Printed on water resistant paper to withstand hard wear and wet conditions, the guide is useful to commercial fishermen, processors, fishery managers, recreational fishermen and divers.

CAREER GUIDES

Careers in Marine Mammal Science. Grades 7-12. MMS. 1994. 12 pp. Single copies free.
This booklet answers questions commonly asked by young people seeking a career in marine mammal science in the United States. It tells about kinds of jobs available, salaries and ways to get practical experience. Also provided are an excellent list of resources and suggestions on how to plan education. Produced by the Society for Marine Mammology.

Careers in Oceanography and Marine-Related Fields. Grades 7-12. CAREERS. 1995. 24 pp. Single copies free.
This book focuses on careers in marine-related scientific, technical and public policy areas, especially those requiring college degrees. The book is geared to high school and college students who are interested in the thrill of discovery and have an appreciation for the environment that comes with working in oceanography. Find out about oceanography jobs, where to get the education required, how to finance the education, what the job market is like and how to locate a job in oceanography. Published by the Dept. of the Navy and the Oceanography Society.

Marine Science Careers. Grades 7-12. MSC. 1996. 40 pp. Single copies free.
This career guide introduces a wide range of career fields in marine biology, oceanography and ocean engineering, and has profiles of 38 professionals who hold jobs in these fields. Students interested in marine careers can get a good idea of the available jobs, the kind of day-to-day work involved and job opportunities now and in the future. The book is published jointly by Maine-New Hampshire Sea Grant and Woods Hole Sea Grant.

GENERAL INTEREST

After the Exxon Valdez Oil Spill. Grades 7-12. In: Alaska's Marine Resources Vol. VII No. 3. October 1992. 16 pp. Single copies free.
This is a report on spill effects on mammals, birds, fish, habitat, subsistence and other resources. An overview of the settlement and restoration framework is also included.

A Guide to Cleaning up Beach Debris in Alaska. Grades 7-12. **SG-ED-03.** 1989. 16 pp. No charge for up to 10 copies.
This booklet includes everything teachers need to know about how to organize a successful beach cleanup in Alaska. Information can be applied to coastal areas everywhere.

Get a Grip on Ocean Motion. Grades 7-12. D. Douglas Coughenower. **SG-ED-20.** 1994. Brochure, single copies free, 2-99 copies 20¢ each, 100 or more 12¢ each.
This brochure tells how easy it is to prevent and treat seasickness. It will quickly encourage once-doubtful customers that they can book charterboat and sight-seeing trips without worry.

Surviving on the Foods and Water from Alaska's Southern Shores. Grade 7-12. Dolly Garza. **MAB-3.** 1989. 23 pp. $5.00.
This booklet describes wilderness sources of nutritious foods useful in a survival situation. The reader is advised how to make drinking water safe and how to find and prepare intertidal sea animals, land plants, bird eggs and seaweeds for eating. Information includes identification of poisonous and non-edible plants and animals.

Family Boating: Preparing for the Emergency. Grades 7-12. Dolly Garza. **ASG-31.** 1991. 4 pp. No charge for single copies.
This illustrated fact sheet provides details that boaters should be aware of in preparing for emergencies, especially in the cold waters of Alaska. A list of safety equipment is included, such as personal flotation devices, survival kit, anchor and communication radio. Boaters are encouraged to have a plan in case of emergency, and to take family members through regular safety drills.

TEACHING MATERIALS

ANROE Guide to Alaska Natural Resource Education Materials. M-03. 1997. 24 pp. Single copies free.
Teachers, interpretive centers, home-schoolers, and others teaching about natural resources will find this catalog invaluable. It lists curriculum guides, activity books, kits and other resources available for purchase or loan. Teaching kits contain materials such as slides, videos, specimens, posters, games, tools, puppets and scents. More than 120 items are listed, plus 35 agencies, organizations and programs. Published by Alaska Natural Resource and Outdoor Education Assoc.

POSTERS

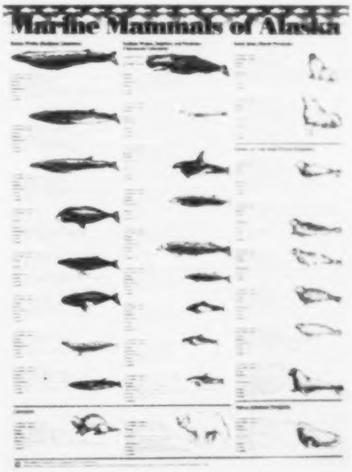
Alaska Marine Ecosystem Poster. Grades K-12. **SG-ED-24.** 1994. 34-by-27 inches. $15.00.
This poster is a beautiful color reproduction of a painting that depicts 38 Alaska marine animals. The identification key to each species makes it a great learning tool in classrooms and interpretive centers. The poster was created by Anchorage artist Debra Dubac for the *Exxon Valdez* Trustee Council.

Alaska's Ocean Bounty Poster. Grades K-12. **SG-ED-19.** 1994. 11-by-17 inches. One poster $4.75, $2.75 for each additional.
This black-and-white poster depicts 36 of Alaska's most important seafood species. Scientifically accurate drawings are accompanied by interesting facts about each species. On the back side of the poster, illustrated instructions show how to make art prints from fish. The laminated version makes an excellent placemat.

Coho Salmon Poster. Grades K-12. **SG-ED-25.** 1995. 11-by-17 inches. One poster $4.00, $2.00 for each additional.
This colorful poster shows one of nature's most amazing animal migrations, the 2,000-mile odyssey of the Pacific silver (coho) salmon. Kids and adults alike will enjoy tracking the trials faced by these hardy fish as they go from freshwater streams, out to sea, and back to freshwater again to spawn. Good for classroom use.

Marine Mammal Poster. Grades K-12. MMP. 1995. 17-by-22 inches. One poster $4.00, $2.00 for each additional.
This poster has line drawings and descriptions of 28 marine mammals of Alaska. Good reference for teachers and students. Edited by Kate Wynne, University of Alaska marine mammal specialist.

Wet and Wild Poster. Grades K-12. **SG-ED-26.** 1995. 22-by-30 inches. $15.00.
This beautiful, award-winning



color poster features a painting by Alaska artist Susan Ogle. The poster also has a resource stewardship message in eastern Aleut dialect. A fine gift for those who appreciate nature and embrace wise use of ocean resources.

VIDEOS

Beachwalk Video and Brochure. Video, "Walk on the Wild Side." Grades 4-12. BWV. 1995. 12 minutes. $20.00; "Beachwalk" brochure by Madelyn Yerden-Walker. **SG-ED-21**. 1994. Single copies free, multiple copies $0.15 each.
Don't squash that sea star! The fascinating rocky intertidal shorelines of Alaska attract more admiring visitors every year. This video and accompanying brochure advise how to conduct a low-impact visit to these biologically rich but vulnerable places. The brochures are an ideal handout at interpretive centers and to students prior to beach field trips.

Cold Water Near-Drowning. Grades 7-12. **MAPV-2**. 1983. 20 minutes. $15.00. Workbook available, **SG-ED-10**. $4.00.
If an unconscious person is pulled out of cold water, has the person drowned? Not necessarily is the answer, and your awareness and skills could save a life. This program demonstrates how to treat a cold water near-drowning victim, and demonstrates CPR on an adult.

Hypothermia. Grades 7-12. **MAPV-1**. 1986. 15 minutes. $15.00. Workbook available, **SG-ED-15**. $4.00.
Cold weather can kill as easily as a fall from a cliff. This program demonstrates the danger of hypothermia on a fishing boat, how to recognize hypothermia, what to do about it, and how to prevent it.

Frostbite and Other Cold Injuries. Grades 7-12. **MAPV-17**. 1988. 16 minutes. $15.00. Workbook available, **SG-ED-07**. $4.00.
Cold, wind, rain, water, snow and ice are conditions that can cause minor to fatal cold injuries to the unprepared person. This program demonstrates the four types of cold injuries and how to treat them. It also shows prevention and situations in which you might get a cold injury.

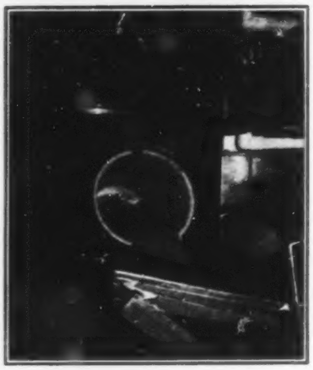
Shore Survival. Grades 7-12. **MAPV-4**. 1983. 22 minutes. $15.00. Workbook available at $3.50.
Do you know how to survive on a remote Alaska shore? This program demonstrates the seven steps to survival, how to build an emergency shelter from materials at hand, how to create signal devices, and how to use your own resourcefulness and ingenuity to stay alive.

Sea Survival. Grades 7-12. **MAPV-3**. 1983. 21 minutes. $15.00.
Your fishing boat is sinking in the Gulf of Alaska. Do you know what to do immediately to save your crew and your own life? This program shows the seven steps to survival; how to use a life raft; how to conserve body heat, energy, and water on a life raft; and how to safely board a rescue helicopter.

It Could Have Been Prevented. Grades 7-12. **MAPV-18**. 1990. 17 minutes. $15.00.
This dramatic video is about small boat safety in rural Alaska. Issues such as alcohol, weather, and personal flotation devices are demonstrated through a fictional story about a family traveling upriver to a fish camp. It tells how to prevent the tragedy that befalls the boaters.

Ocean Ranching. Grades 7-12. **MAPV-19**. 1990. 29 minutes. $15.00.
This video shows the history of Alaska's hatcheries and describes the present-day procedures and operations. In Prince William Sound and other Alaska fishing areas, the release of healthy young salmon into the ocean has resulted in high returns of adult salmon. Hatcheries are indeed stabilizing the up-and-down cycles of wild salmon runs.

OCEAN RANCHING



**A Production of the
University of Alaska
Sea Grant Marine Advisory Program**

ALASKA RESOURCE ISSUES FORUM VIDEOS

The Alaska Resource Issues Forum is a series of television programs that brings together for discussion the principal spokespersons on contemporary resource issues in Alaska. The programs have been broadcast on Alaska public television stations. All are moderated by Rick Steiner, University of Alaska assistant professor of fisheries. Excellent for use in high school and junior high science and social studies classes.

How to purchase videotapes: Contact the University of Alaska Marine Advisory office in Anchorage, phone (907) 274-9691, fax (907) 277-5242, aymap@uaa.alaska.edu, 2221 E. Northern Lights Blvd., #110, Anchorage, AK 99508-4140. Price: $15.00 each.

How to borrow videotapes: Contact University of Alaska Sea Grant in Fairbanks, phone (907) 474-6707, fax (907) 474-6285, fypubs@aurora.alaska.edu.

TITLES AND DESCRIPTIONS

The Subsistence Crisis: Seeking Common Ground. Grades 7-12. **MAPV-23.** 1992. 59 min.
Several viewpoints on managing subsistence hunting and fishing, currently regulated by the federal government.

Arctic National Wildlife Refuge: Wilderness or Oil Reserve? Grades 7-12. **MAPV-26.** 1995. 59 minutes.
Oil drilling on the coastal plain of the Arctic National Wildlife Refuge.

Alaska's Subsistence Dilemma. Grades 7-12. **MAPV-27.** 1996. 59 minutes.
How to resolve the subsistence issue.

Alaska's Salmon Marketing Crisis. Grades 7-12. **MAPV-28.** 1996. 59 minutes.
Salmon industry experts talk about the 1996 market.

The Wolf Initiative: Ballot Measure No. 3. Grades 7-12. **MAPV-30.** 1996. 59 minutes.
Ban on same-day airborne hunting and trapping of wolf, wolverines, fox, and lynx.

Trouble in the Bering Sea. Grades 7-12. **MAPV-32.** 1996. 59 minutes.
Fishing industry, environmentalists, scientists, locals, and fishery managers talk about the decline of mammals, birds, and fish in the Bering Sea.

Native Sovereignty in Alaska. Grades 7-12. **MAPV-33.** 1997. 59 minutes.

Ordering Instructions: Make checks payable to University of Alaska Sea Grant. Send orders to:
Alaska Sea Grant College Program, University of Alaska Fairbanks, P.O. Box 755040-MEB, Fairbanks, AK 99775-5040
Phone (907) 474-6707
Fax (907) 474-6285

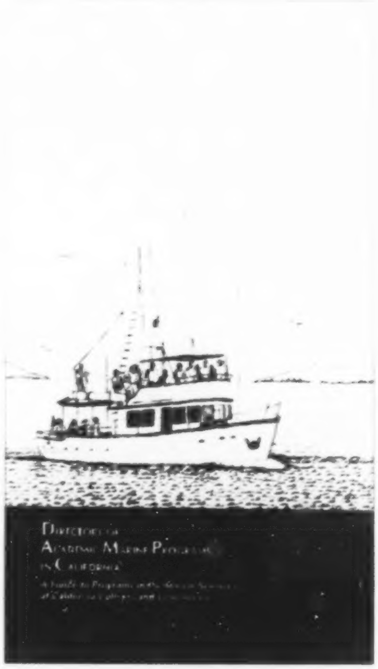
California Sea Grant Program

University of California
9500 Gilman Drive
La Jolla, CA 92093-0232
(619) 534-4446

Directory of Academic Marine Programs in California. Grades 10-12. **Publication No. E-CSGCP-005.** Third Edition. 1993. Free.
A guide for teachers and students to undergraduate and graduate courses of study in the marine sciences at California colleges and universities.

Salt Marsh Vegetation: Examples from the Tijuana Estuary. Grades 10-12. Joy B. Zedler. **Publication No. E-CSGCP-003.** 1982. Free.
This 40-page publication describes salt marsh vegetation in southern California using the Tijuana Estuary as an example and explains how marsh plants are able to tolerate the stresses of the environment.

Ordering Instructions:
Send requests to
Communications Department
California Sea Grant
University of California
9500 Gilman Drive
La Jola, CA 92093-0232



Connecticut Sea Grant College Program

University of Connecticut
at Avery Point
1084 Shennecossett Road
Groton, CT 06340-6097
(860) 405-9128

Plants and Animals of Long Island Sound. Grades 4-12. Lisa Wahle. **CT-SG-90-11.** Single copies free; bulk $0.60 each plus postage.
Often called the "Urban Sea," Long Island Sound is a large estuary that stretches from New York on the western end to the eastern tip of Long Island with Connecticut making up its entire northern border. This 33-page guide, completed as part of the Long Island Sound Study, introduces the beautiful creatures of the Sound through line drawings.

Environmental Stewardship. Grades 4-12. Poster. $1.50.
A colorful, 18-by-24 inch message on how citizens can help protect water quality by taking action in their own homes. A collaborative effort between Connecticut Sea Grant Marine Advisory Program and the New York Sea Grant Extension.

Luck Isn't Enough: The Fight for Clean Water. Grades 9-12. $10.00.
A 12-minute videotape that describes the causes and effects of nonpoint-source water pollution and offers suggestions on ways local citizens and local decision makers can combat it. A joint project between Connecticut Sea Grant Marine Advisory and the New York Sea Grant Extension.

Save Our Sound. Grades 3-6. Available on loan.
A play about Long Island Sound produced by and for middle school students, as a joint project between Connecticut Sea Grant, Eugene O'Neill Theater and the Groton Youth and Family Services. Students wrote the play, created life-sized puppets and videotaped the performance. Characters include a giant sea turtle, fish, octopi, invertebrates, gulls and Flushy the Talking Toilet.

Connecticut Currents. Adults. Free.
A quarterly newsletter issued by Connecticut's Marine Advisory Program containing upcoming events and timely coastal and marine issues.

Long Island Sound: Worth Fighting For. Grades 7-12. $15.00.
A one-hour documentary produced by Connecticut Sea Grant and Connecticut Public Television. Learn how past and present activities related to Long Island Sound have impacted Connecticut's economy and landscape, and how our futures are tied to this valuable estuary.

Invasion of the Zebra Mussels: It's Just a Matter of Time. Grades 9-12. VHS format. 10 minutes. Produced by Jacoby-Storm. **CT-SG-95-02.** $10.00, (includes shipping).
This video, narrated by Mason Adams, discusses the origin and threat of the zebra mussel invasion in the U.S., and what boaters and others can do to help prevent their spread.

Sound Values. Grades 9-12. Joseph Blumberg. Fact Sheet. Free.
How much is an estuary worth? This one-page fact sheet shows results of an economic study to determine the value of Long Island Sound, in terms of fishing, recreation, aesthetics and more.

Long Island Sound Study Fact Sheets. For Teachers and Grades 9-12. Free. Please order by number.
This LISS is a bi-state effort between the Connecticut Marine Advisory Program and the New York Sea Grant Extension Program. Since 1987 they have produced 15 fact sheets (2-4 pages each) on a variety of marine-related topics on estuaries in general and LIS in particular.
Topics include:

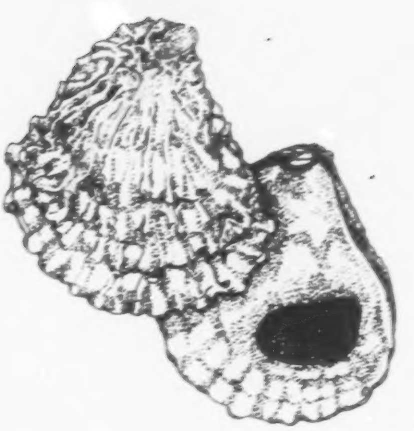
- Hypoxia and LIS
- Modeling LIS
- Wastewater Treatment
- The LIS Study
- Supporting the Sound
- Priority Action Plan Demonstration Projects
- Nonpoint-Source Pollution in LIS
- Floatable Debris
- Seafood Issues
- Toxic Contamination in LIS
- Nutrient Reduction: New Solutions to Old Problems
- Pathogens
- The Impact of Septic Systems on the Environment
- Water Conservation and Marine Water Quality
- What is the LIS Study?

Sound Facts Booklet. Grades 6-Adult. Peg Van Patten, Milton Moore and Eamon O'Muin. 72 pages. $4.95. 40 percent discount available for teachers ordering more than 10 booklets.
Sixty-seven colorful fun facts about Long Island Sound in 6-by-9 inch booklet. The biology, ecology, chemistry, physical parameters and geology of our favorite estuary are included. Examples: "My Wild Irish Moss," "Neon: it's a Gas," "Rock Around the Sun," (geology) and "Sea Cucumbers: not for Salad."

Introduced Species. Grades 9-12. Nancy Balcom. Fact Sheet. Free.
What are "introduced" or non-native aquatic nuisance species, and why are they a problem for coastal ecosystems? This one-page fact

sheet answers these questions and more.

Ordering Instructions: Send requests to:
University of Connecticut
Sea Grant Publications
1084 Shennecossett Road
Groton, CT 06340
(860) 405-9128



University of Delaware

Sea Grant Marine Advisory Service
700 Pilottown Road
Lewes, DE 19958-1298
(302) 645-4346

MAS Bulletins. Grades 4 - Adult. $3.50 for entire series. These four- to eight-page illustrated publications offer in-depth information about popular topics. Single copies of up to five different titles at a time are free. Additional titles or multiple copies of a single title are 50¢ each. For large orders, contact Marine Communications at (302) 831-8083.

- **The Horseshoe Crab.** Reviews the biology, medical uses, and population trends of this unique seashore animal. Revised 1995.
- **Jellyfish - Regular Summer Visitors to Delaware Shores.** Identifies species common to the region; includes a discussion of how jellyfish sting. 1987.
- **Shark.** Tells why sharks have been such successful predators and why their populations are now threatened. Revised 1992.
- **Common Seashells of Delaware.** Provides descriptions and photos of seashells common to Delaware's shores. Revised 1990.
- **Coastal Landscaping in Delaware with Common Marsh and Dune Plants.** Introduces more than a dozen plants and provides guidelines for successful planting. 1991.
- **A Consumer Guide to Safe Seafood Handling.** Provides tips for selecting, storing, handling, and preparing quality seafood. Revised 1996.
- **The Bottle-Nosed Dolphin: Our Coastal Whale.** Reviews dolphin biology and details stranding procedures. 1989. Photocopies only.
- **Delaware's Blue Crab.** Examines the biology of the blue crab. Includes a glossary of watermen's crabbing terms. 1984. Photocopies only.
- **Flounder: The Ocean's Platter.** Identifies common Delaware species and includes biology, habitat, fishing tips, and photos. 1987. Photocopies only.
- **The Hard Clam.** Reviews the biology of the hard clam, recreational and commercial clamming, and shucking and storage of hard clams. 1986. Photocopies only.
- **The Delaware Bay Oyster and the MSX Problem.** Provides background information on this devastating oyster disease and the steps being taken to prevent future outbreaks. 1981.

CHILDREN'S ACTIVITIES

These special publications make learning about the marine environment more fun! Discounts for large orders are available to educators. Contact Marine Communications at (302) 831-8083 for additional information.

Horseshoe Crab Model. Grade 4 - Adult. $1.00. 1994. A perfect companion to the horseshoe crab bulletin, this detailed, life-sized paper model to cut out and tape together is suitable for youngsters in 4th grade and up. Includes background information about the horseshoe crab and a crossword puzzle to test readers' knowledge.

BEST COPY AVAILABLE

Discovery Mobile. Grades 5 - Adult. $5.00, plus $2.95 for shipping and handling. 1996. This full-color mobile highlights fascinating sea creatures and exciting tools that marine scientists are using to explore the ocean. The project includes fun facts about each sea animal and tool, a brief reference list of books and Web sites, and simple instructions for assembly.

MAS Notes. Grade 4 - Adult. $1.50 for entire series. This series of one- or two-page fact sheets answers frequently asked questions on marine topics. Single copies of up to five different titles at a time are free. Additional titles or multiple copies of a single title are 15¢ each. For large orders, contact Marine Communications at (302) 831-8083.

- Attention Recreational Crabbers: Secure Your Markers to Your Pots.
- Safety at the Beach.
- Beach Safety: Protect Yourself from Lightning.
- Fisheries Conservation Begins with You: Tips on Releasing a Hooked Fish.
- Guidelines for Spring Boat Refitting.
- Guidelines for Winter Boat Lay-Up.
- Recreational Boaters: Beware of Commercial Drift Gill Nets.
- Plastic Pollution in the Marine Environment: Boaters Can Help Control a Growing Problem .
- Seafood Is Good for You.
- Consumers: Know the Facts about Eating Raw Shellfish.
- Eating Raw Finfish: What Are the Risks, the Benefits?
- Marine Careers: The Scientist.
- Galvanic Corrosion.

AQUACULTURE

This series of four- to eight-page publications furnishes timesaving, practical information about aquaculture production and development. Single copies of each title are free (photocopies only). For large orders, contact Marine Communications at (302) 831-8083.

Aquaculture in Delaware: Its Potential, Its Future Prospects. Grade 8 - Adult. 1991. Introduces various production systems, reviews regulatory and financial barriers to the industry, and highlights the natural areas and aquatic species with the greatest potential for aquaculture in our region.

Delaware Aquaculture Resource Guide. Grade 8-Adult. 1991. Lists contacts for technical information and assistance in Delaware; other regional and national programs; newsletters, magazines, and other periodicals; reference books and manuals; aquaculture equipment and suppliers; and aquaculture associations.

Interim Guide to Regulations Affecting Aquaculture Production in Delaware. Grade 8 - Adult. 1992. Identifies the federal and state agencies that regulate aquaculture production and summarizes the environmental regulations and permits you may need before starting into aquaculture.

These fact sheets, produced in cooperation with the Northeast Regional Aquaculture Center, provide overviews of specific issues in aquaculture. Single copies of each title are free. For large orders, contact Marine Communications at (302) 831-8083.

History and Impact of MSX and Dermo Diseases on Oyster Stocks in the Northeast Region. Grade 8-Adult. 1993. Summarizes the natural history, distribution, diagnosis, transmission, environmental influences, and management practices for control of these devastating oyster parasites.

Genetic Improvement of the Eastern Oyster for Growth and Disease Resistance in the Northeast. Grade 8 - Adult. 1993. Reviews breeding methods used to improve shellfish stocks and summarizes efforts to develop new strains of the eastern oyster.

State Policies for Aquaculture Effluents and Solid Wastes in the Northeast Region. Grade 8 - Adult. 1995. Provides a comparative review of state policies for the disposal of aquaculture wastes.

SPECIAL PUBLICATIONS

These publications range from books to newsletters to special reports. In your order, please include the Sea Grant publication number beginning "DEL-SG-" where applicable. Prices listed are per copy.

The Delaware Estuary: Rediscovering a Forgotten Resource. Grade 6 - Adult. 144 pp. Second edition, 1991. $25.00. This oversized book examines the estuary's history, geology, dynamics, living resources, and management. Also features color and historical photos, maps, graphs, and nature guides.

Seafood Delaware Style. Grade 6 - Adult. **DEL-SG-13-88.** 55 pp. Revised 1995. $4.00. Contains more than 30 recipes for seafood appetizers, entrees, soups, and salads, as well as nutritional information and tips on purchasing, handling, storing, preparing, and serving high-quality seafood.

What Is an ITQ? Grade 8 - Adult. 2 pp. 1994. Free. Describes problems with traditional fisheries management and introduces an alternative management tool, the Individual Transferable Quota, which grants private citizens exclusive rights to harvest a portion of a fishery. 2 pp. 1994.

UNIVERSITY OF DELAWARE SEA GRANT
REPORTER
Winter 1996
Volume 14, No. 2
How Can We Make Oysters Immune to Disease?

University of Delaware Sea Grant Reporter. Grade 6 - Adult. Free subscription. This biannual newsletter reports on the research, education, and advisory service activities of the University of Delaware Sea Grant College Program. Includes listings of new publications, facts on a wide variety of marine topics, and seasonal seafood recipes.

Charter Boat Marketing Tips: A Guide to Effective Advertising. Grade 6 - Adult. **DEL-SG-18-87**. 32 pp. 1987. $3.00.
This handbook for charter boat captains features tips on how to target an audience, choose the best advertising medium, and monitor advertising results. Includes step-by-step instructions for ad planning.

Seascapes II. Grade 4 - Adult. **DEL-SG-11-83.** 44 pp. 1983. $2.00.
This booklet contains 18 timeless, readable articles on marine topics, including currents, dunes, Bombay Hook, Assateague ponies, seafood, bay and river pilots, biting flies, sunken treasure, and marine critters.

Coastal Tourism Development Workshop Summary Proceedings. Grade 8 - Adult. **DEL-SG-01-89.** 18 pp. 1989. $2.00.
A workshop was held May 12, 1988, to present results of tourism research to individuals associated with Delaware's coastal tourism industry. Discussions focused on the implications of such research for recreational resource management and tourism development within the resort community.

ZEBRA MUSSELS & EXOTIC SPECIES

The following special publications are designed to raise awareness of a potential problem facing the state and region through the invasion of non-native species. Single copies are free; contact Marine Communications at (302) 831-8083 for large orders.

Zebra Mussel Watch Card. Grade 6 - Adult. 1992.
A wallet-sized card that tells how to identify the zebra mussel and what to do if you find it.

Zebra Mussel Alert Decal. Grade 6 - Adult. 1994.
A bright, weather-proof decal for coolers, tackle boxes, or bait buckets that carries reminders of what to look for and how to prevent the pest from spreading.

Zebra Mussel: Present Threat, Future Danger? Grade 6 - Adult. **DEL-SG-02-94.** 12 pp. 1994.
A full-color report highlighting the threat the zebra mussel poses to Mid- Atlantic states and Sea Grant's efforts to prepare the region for a mussel invasion.

Zebra Mussel: A Threat on the Move. Grade 6 - Adult. **DEL-SG-03-95.** 12 pp. 1995.
A follow-up report detailing the Mid-Atlantic Sea Grant network's zebra mussel research and education efforts.

Mid-Atlantic Zebra Mussel Fact Sheet. Grade 6 - Adult. 6 pp. 1993.
A bulletin that examines the potential for zebra mussel infestation in the Mid-Atlantic region, from North Carolina to New York.

Exotic Species Watch. Grade 6 - Adult. 1995-96.
A series of four fact sheets providing information about non-native aquatic plants and animals that pose a threat to Delaware, from zebra mussels and grass carp to purple loosestrife and hydrilla.

DELAWARE ESTUARY SITUATION REPORTS

This series is devoted to discussion of current issues relevant to conservation, use, and development of Delaware Estuary resources. The reports are geared toward resource managers, decision makers, and the general public.

Coal Transfer. Grade 8 - Adult. **DEL-SG-01-84.** 8 pp. 1984. $1.00.
Can an environmentally safe coal-transfer operation be undertaken in lower Delaware Bay?

Fisheries Fluctuations. Grade 8 - Adult. **DEL-SG-07-86.** 8 pp. 1986. $1.00.
Why have several Delaware Bay fisheries experienced such dramatic shifts in population? What effects do human activities and climatic factors have on fisheries populations?

Economic Impacts of the Delaware Estuary. Grade 8 - Adult. **DEL-SG-02-87.** 12 pp. 1987. $1.00.
How important is the Delaware Estuary to Delaware's economy and the state's economic development?

Remote Sensing. Grade 8 - Adult. **DEL-SG-21-89.** 8 pp. 1989. $1.00.
Can the satellite technology called remote sensing contribute to a better understanding of the Delaware Estuary and ultimately help determine the resource's health?

Emergency Response. Grade 8 - Adult. **DEL-SG-03-91.** 12 pp. 1991. $1.00.
Which agencies respond to environmental disasters in the Delaware Estuary, what roles do they play, and how did each agency react during an actual oil spill in the Delaware Estuary?

Sea-Level Rise. Grade 8 - Adult. **DEL-SG-21-91.** 8 pp. 1991. $1.00.
How could sea-level rise—potentially accelerated by global warming—affect our beaches, wetlands, water supplies, and communities?

Eutrophication. Grade 8 - Adult. **DEL-SG-03-94.** 8 pp. 1994. $1.00.
Is the Delaware Estuary suffering the negative consequences of nutrient overenrichment?

Trace Metals. Grade 8 - Adult. **DEL-SG-04-94.** 8 pp. 1994. $1.00.
What are trace metals, where do they come from, and what happens to those that enter the Delaware Estuary?

DECISIONS FOR DELAWARE

These reports address marine resource problems or opportunities facing the state and region, providing legislators and the people they represent with facts on which to base their decisions. Photocopies only.

OCS Development. Grade 8 - Adult. **DEL-SG-01-75[1].** 43 pp. 1975. $3.00.
Reviews the environmental impact of exploiting oil and natural gas resources on the Atlantic outer continental shelf (OCS).

Legal Aspects of OCS Development. Grade 8 - Adult. **DEL-SG-01-75[2].** 24 pp. 1975. $3.00.
Considers major uses of the Atlantic OCS: petroleum exploitation, deep-water ports, and waste dumping.

Oil Spills. Grade 8 - Adult. **DEL-SG-13-77.** 26 pp. 1977. $3.00.
Reviews short- and long-term effects, protection measures, and who takes charge when a spill occurs.

Beach Management. Grade 8 - Adult. **DEL-SG-07-78.** 25 pp. 1978. $3.00.
Summarizes the causes, control, and management of coastal erosion.

Inland Bays. Grade 8 - Adult. **DEL-SG-01-83.** 32 pp. 1983. $3.00.
Describes environmental problems in Indian River and Rehoboth bays, examines their economic and social impacts, and recommends approaches for management and development.

TECHNICAL PUBLICATIONS

These reports are the results of applied research by MAS staff. In your order, please include the Sea Grant publication number beginning "DEL-SG-" where applicable. Photocopies only.

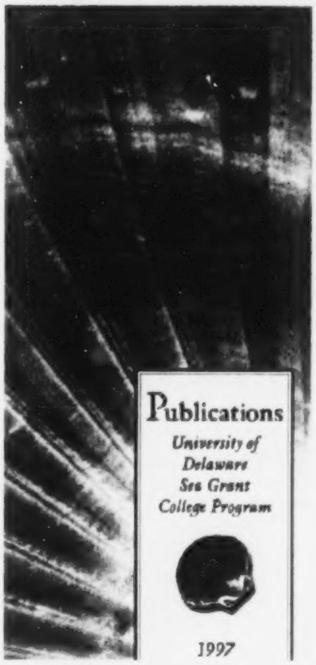
1981 Milford World Championship Weakfish Tournament: A Socio-Economic Analysis. Grade 8 - Adult. **DEL-SG-25-81.** $2.00.

1982 Head/Charter Boat Fishing in Delaware: An Analysis of Customers and Their Economic Impact. Grade 8 - Adult. **DEL-SG-03-83.** $2.00.

Delaware Beaches Tourist Information Center Visitor Profile: Summer 1984. Grade 8 - Adult. $2.00.

The 1985 Delaware Recreational Boating Survey: An Analysis of Delaware-Registered Boaters. DEL-SG-06-87. Grade 8 - Adult. $2.00.

Bethany/Fenwick Area Chamber of Commerce Information Center Visitor Profile: Summer 1986. **DEL-SG-26-87.** Grade 8 - Adult. $2.00.



Beach Management Survey: An Examination of Attitudes and Concerns of Coastal Property Owners, Resort Merchants, and Realtors in Sussex County, Delaware. Grade 8 - Adult. **DEL-SG-05-88.** $2.00.

Citizen Opinions About the Delaware Estuary. **DEL-SG-03-90.** Grade 8 - Adult. $2.00.

Rehoboth Beach/Dewey Beach Chamber of Commerce Visitor Center: 1989 Visitor Profile. Grade 8 - Adult. $2.00.

Recreational Uses of Delaware's Inland Bays: Implications for Social and Environmental Carrying Capacity. Grade 8 - Adult. **DEL-SG-19-92.** $4.00.

Lewes Chamber of Commerce and Visitors Bureau Visitor Profile: Spring, Summer, and Fall 1992. Grade 8 - Adult. $2.00.

Recreational Benefits of Delaware's Public Beaches: Attitudes and Perceptions of Beach Users and Residents of the Mid-Atlantic

Region. Grade 8 - Adult. **DEL-SG-05-94.** $3.00.

1995 Delaware Boating Study: An Analysis of Delaware Registered Boaters. Grade 8 - Adult. $2.00.

AUDIOVISUALS

The University of Delaware Sea Grant College Program has produced the following videotapes and slide/tape presentations. All are available for purchase; the purchase price is listed in parentheses. They may also be rented for a period of seven days for $5. (The renter is responsible for return postage.) A refundable $25 deposit is also required for rental. Please use separate checks for your deposit and rental fee. The deposit check will be returned to you upon receipt of the program you rented. In your order, please specify format (VHS, 35-mm slides). For more information, please call the Marine Communications Office at (302) 831-8083.

"Shellfish and Your Microwave—The Perfect Couple." Grade 8 - Adult. (VHS and Beta) 22 min. $15.00. Introduces viewers to the delicious and convenient alternative of microwave cooking for shellfish. From defrosting shellfish to opening them, the microwave is a handy tool.

"Calamari Preparation and Cuisine." Grade 8 - Adult. (VHS and Beta) 30 min. $15.00. Introduces viewers to squid biology and processing for market. Four recipes are demonstrated: barbecued calamari, calamari salad with champagne dressing, stuffed calamari, and fried calamari rings.

"Shark Preparation and Cuisine." Grade 8 - Adult. (VHS and Beta) 15 min. $15.00. Demonstrates proper handling and cooking of dogfish shark. Recipes include shark nuggets, shark salad, and a shark-and-scallop holiday dish.

"Marine Corrosion—The Silent Enemy." Grade 8 - Adult. ($15.00, VHS and Beta; $50.00, slide/tape) 15 min. Explains what marine corrosion is and why it occurs, and offers techniques for preventing it.

"Marine Careers." Grade 8 - Adult. (VHS and Beta) 18 min. $15.00. Describes opportunities in marine transportation, science, technology, recreation and tourism, uniformed services, environmental management, and commercial fishing.

"The Blue Crab." Grades 4-8. ($15, VHS and Beta; $50, slide/ tape) 15 min. Covers the natural history of the area's most famous crustacean through simple language, colorful pictures, and cartoons. The package includes a classroom activities booklet.

"Beachwalk: Exploring the Living Coast." Grades K-3. ($15.00, VHS and Beta; $50.00, slide/tape) 15 min. Introduces young students to the marine life easily found on Delaware's beaches.

"Water-Quality Monitoring for Volunteers." Grade 8 - Adult. (VHS) $15.00. 15 min. Instructs viewers in techniques for monitoring important water-quality parameters (pH, dissolved oxygen, salinity, turbidity, temperature, nitrates) in Delaware's Inland Bays.

"The ASHREEF." Grade 6 - Adult. (VHS)$15.00. 7 min. Reviews a special recycling project to develop coal-ash waste into an artificial reef off Delaware's coast.

Ordering Instructions:

If no charge is involved, you can place your order through our on-line catalog at http://www.udel.edu/cms/pub.html. Sea Grant publication numbers, beginning with "DEL-SG-," and prices are listed in the above text. If a charge has been listed for any publications you request, please enclose a check or money order for the total amount made payable to the University of Delaware. Publications or audiovisuals will be mailed as soon as proper funds are received. When you request an audiovisual rental, please enclose separate checks, one for the rental fee and one for the deposit. The deposit check will be held and returned to you when you return the program. Single copies of some publications are free. The charge for multiple copies of these publications helps cover our printing and postage expenses. For more information about obtaining large numbers of specific publications, please contact the Marine Communications Office at MarineCom@mvs.udel.edu or (302) 831-8083. Quantity discounts may be available. Please be sure to include your name and address on the order form, and mail your order to:

University of Delaware
Sea Grant Marine Advisory Service, 700 Pilottown Road, Lewes, DE 19958–1298, (302) 645-4346
or University of Delaware Marine Communications Office, Newark, DE 19716–3530, (302) 831-8083
MarineCom@mvs.udel.edu
(http://www.udel.edu/cms).

State University System of Florida

Sea Grant College
Program Box 110409
Gainesville, FL 32611
(352) 392-2801

Marine Education. Grades K-12. **MAP-17.** 1982. 18 pp.
Provides information on finding funds and opportunities for K-12 marine education resources, courses and activities.

Marine Education and Research Organizations in Florida. Grades 8-12. **SGEB-3.** 1991. 86 pp. $8.00.
A compilation of educational and research organizations in Florida with programs in the marine sciences. Includes addresses, phone numbers and descriptions of facilities and programs.

The Beach - A Natural Protection From the Sea. Grades 8-12. **MAP-19.** 4 pp. Free.
Discusses the principle features of a beach that are effective in protecting the uplands, how the beach "works," the effect of littoral drift, and the function of the sand dunes.

Florida's Estuaries: A Citizen's Guide to Coastal Living and Conservation. Grades 8-12. **SGEB-23.** 1993. 24 pp. $2.00.
Describes the importance of estuaries and the impact of humans on the quality of life in the estuary. Includes statistics on the effects of urban developmention on Florida's coastal ecosystems. Written in an easy-to-read style that is enhanced by the colorful line drawings used throughout the book.

Fisheries Biology for Everyone. Grade 10. 1986. 178 pp. $3.00.
Presents fisheries biology in an enjoyable and readable way, but stresses the management aspects relative to the scientific and ecological. This hand-lettered manuscript, which includes cartoon drawings emphasizing important points, brings to life information vital to any user of the living marine resources, particularly fishermen. Can also be used in senior high school level marine biology courses.

Marine 4H Program Materials. (Nine available from Florida 4H Department, University of Florida).

Florida 4H Marine Science Program. Grades 8-12. **4H-314.** 49 pp.
Projects in this annual are designed mainly for 4H leaders and members. Each project is a unique study because a simple procedure is all that is needed to fulfill its objective. Projects include both biotic (those that deal with living things) and abiotic (those that are not living such as sands and tides). The biotic factors are arranged from the lowest form of marine organism to the highest form, while the abiotic factors are placed in their respective order so that learning from one project will help in working the next.

Field Study of the Marine Environment (Leader's Guide). Grades 8-12. **4H-338.** 18 pp.
Provides the leader with information useful in helping 4H members understand the importance of one marine ecosystem to another and, in turn, the importance of ecosystems to humans and vice versa.

Starting and Maintaining a Marine Aquarium. Grades 8-12. **4H-356.** 12 pp.
Explains all about aquaria to 4H members who are interested in starting a project on saltwater aquaria, including using artificial or natural seawater, setting up the aquarium, filling it, buying the fish, feeding, cleaning, water maintenance, etc.

Starting and Maintaining a Marine Aquarium (Project Record). Grades 8-12. **4H-357.** 12 pp.
Accompanies 4H-356 for use of the 4H member in keeping a record of the project.

Life in the Sea (Member's Guide). Grades 8-12. **4H-358.** 47 pp.
Contains seven projects that can be started by visiting an oceanarium and finished through 4H Club work or individual research at home or in a library. These projects include dolphins, manatees, seals and sea lions, penguins, mollusks, Caribbean/Atlantic Coast tide pool and coral reefs.

Life in the Sea (Project Record). Grades 8-12. **4H-359.** 23 pp.
Accompanies 4H-358 for use of the member in keeping a record of the projects.

Life in the Sea (Leader's Guide). Grades 8-12. **4H-360.** Assists leaders in working with members on projects in 4H-358. Contains answers to the

questions raised in 4H-358.

Intertidal Zone Project (Guide for Senior 4H Members). Grades 8-12. **4H-362.** 76 pp.
Intended for those who live near the ocean or for those who can visit the beach at least once a month. Explains the working of the intertidal zone and contains six activities to be conducted, including seining, plant and algae collecting, plankton collecting, measuring salinity, measuring temperature and measuring turbidity.

Wetlands (Project Manual). Grades 8-12. **4H-365.** 19 pp.
Describes the types of wetlands - estuaries, salt marshes, swamps and mangrove wetlands - and discusses their importance to the marine life that use the wetlands as a nursery.

Wetlands (Project Record). Grades 8-12. 4H-366. 11 pp.
Accompanies 4H-365 for use of the 4H member in maintaining a record of the wetlands projects.

Florida 4-H Department Marine Booklists. Grades 8-12. 25 pp.
A list of publications, sources and annotated bibliography of books found useful in the development and implementation of the Florida 4-H Marine Program.

4-H Marine Resource Program Guide. Grades 8-12. 4 pp.
This publication describes program resource opportunities and suggests types of individuals that could service a Marine Education Program.

The National 4-H Report Form: An Example for a Marine Science Project. Grades 8-12. 19 pp.
This publication describes and gives examples on how to adopt the National 4-H Report Form for use in the Marine Science Projects.

The Science of Florida Bay. Video and Teacher's Guide. Grades 8-12. **SGEB-36.** 1997. $6.00.
This 40-minute video highlights 10 marine science projects being conducted in Florida Bay. Looks at algal blooms, mangrove deaths, seagrass losses, sea turtle research and others. Comes with a 12-page educator's guide to the video series.

Florida's Estuaries Poster. Grades 8-12. 1995. $2.00.
Poster describing a typical Florida estuary circa 1930. Describes major components of the estuary as they would have appeared before the arrival of large numbers of people and associated coastal development.

Ordering Instructions for Sea Grant Materials: Mail checks, payable to the University of Florida to:
Florida Sea Grant College Program
Box 110409,
University of Florida
Gainesville, FL 32611

Ordering Instructions for 4-H Marine Program Materials: mail inquiry to:
4-H Program
Box 110225
University of Florida
Gainesville, FL 32611

Don't Be A Back Yard Toxic Warrior!

University of Georgia

Sea Grant College Program
Marine Science Building
Athens, Georgia 30602-3636
(706) 542-6009

The Blue Crab. Grades 9-12. Produced and written by Taylor Schoettle. Video, VHS Format. $35.30 (includes shipping). This 30-minute video was produced for high school audiences and the general public. It depicts the life cycle of the blue crab and discusses the economic importance of this resource.

The Coast of Georgia: Land, Sea and Marsh. Grades 6-12. Produced, written and directed by Dr. Jay Calkins. Video, VHS Format. $35.30. (includes shipping). This 30-minute video program was produced to give high school and middle school students and the general public an overview of the coast of Georgia. Beach processes, hydrographics and food webs of the salt marshes are all revealed in an attractive audiovisual format. Human impact and the controversial use and abuse of coastal areas is also discussed.

Harvesting Georgia's Shrimp. Grades 9-12. Video. VHS Format. $35.30. (includes shipping). This 20-minute video program shows in detail the harvesting of shrimp on the southeast coast. Boats, gear technology and operation of a trawling vessel in search of the delicious white shrimp are all revealed.

How Birds Make a Living on the Coast. Grades K-12. Written and illustrated by Will Hon. $3.00. (includes shipping). This poster gives students and adults a graphic view of coastal birds. The text and illustrations provide the learner with a look at the anatomical adaptations that coastal birds have developed to feed in a variety of ecological niches.

Gray's Reef (Common Fishes Of). Grades K-12. David Miller and Reita Rivers, illustrated by Charlotte Ingram. $5.00. (includes shipping). This poster illustrates and describes the common fishes found around Gray's Reef National Marine Sanctuary. The fishes found on Gray's Reef are typical of many of the fishes found along the southeast coast, but atypical because many reef fishes of the Caribbean are also found there.

Ordering Instructions: Mail checks, payable to the University of Georgia, to:
University of Georgia
Marine Extension Service
30 Ocean Science Circle
Savannah, GA 31411-1011

University of Hawaii

Sea Grant Program
1000 Pope Road, MSB 200
Honolulu, HI 96822
(808) 956-7410

Ocean Activity Workbook. Grades 6-8. **UNIHI-Seagrant-MR-82-01.** June 1982. 32 pp. Free.

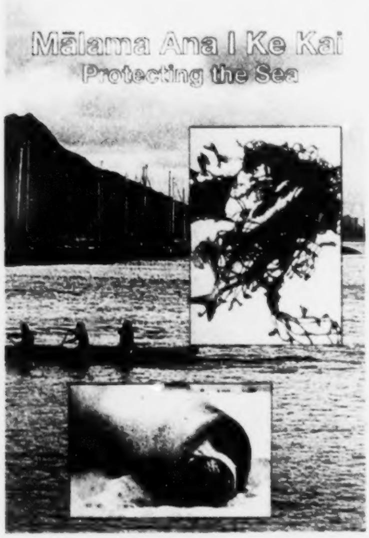
National Survey of Fishery Education in Institutes of Higher Education. Higher education/General interest. Rose T. Pfund. **UNIHI-Seagrant-MR-85-02.** May 1985. 48 pp., 3 appendices. Free.

Makahiki Kai Festival of the Sea '78: Teacher's Guide. For Teachers. Jane Torikai. **UNIHI-Seagrant-WP-00-30.** February 1978. 76 pp. $1.50.

Survey of Fishery Programs in Colleges and Universities in the United States. Rose T. Pfund. Higher education/General interest. **UNIHI-Seagrant-VP-94-02.** 1986. In Fisheries 11(6): 16-21. Free.

Safety Hawaii. Grades 6-8. UNIHI-Seagrant-VP-94-02. 1994. $14.95 To order please write to: University of Hawaii Sea Grant Extension 1000 Pope Road, MSB 226 Honolulu, HI 96822 or Call (808) 956-8191. These short programs highlight popular ocean sports in Hawaii. Part I features body surfing, body boarding, skim boarding and surfing. Part II focuses on wind surfing, kayaking, outrigger canoe paddling and twin-hull sailing. Both programs feature interviews with world famous athletes, action footage and upbeat music. Aimed at junior high and high school students, the programs emphasize the importance of learning to swim before pursuing water sports activities. Because they are less than 10 minutes in length, teachers will be able to integrate them easily into their classroom curricula. Print materials, will expand the ideas presented in the videos.

Hawaii Boating and Water Safety Program: K-6 Workbook and Teacher's Manual. UNIHI-Seagrant-AR-93-02. 1993. 25 pp. (workbook), 23 pp. (manual). Free.
The Hawaii Boating and Water Safety Program K-6 Workbook and the Teacher's Manual were developed in 1991 by the State Harbors Division as part of the Harbor Division's Boating and Water Safety Program, in cooperation with the University of Hawaii Sea Grant Extension Service. The workbook is intended for use by students in elementary schools, both public and private. The Teacher's Manual is a companion to the workbook and offers teachers additional information about the boating and water safety messages in the workbook. The information is intended for use in supervised group discussions. The Teacher's Manual also provides a list of boating and water safety activities that can be practiced in the classroom or on the playground. These activities are intended to reinforce the safety messages in the workbook.



Fagatele Bay National Marine Sanctuary Program: Course Activities. Grades 9-12. Larry Madrigal and Doug Foster. **UNIHI-Seagrant-CR-96-04.** 1996. 79 pp. Free.
The Fagatele Bay National Marine Sanctuary Summer Program consists of three sessions, each two weeks long. The program is geared for eighth grade students in American Samoa, and consists of integrated hands-on lab and field activities. The activities in this manual represent the written portion of the program that students are required to complete.

Water: Our Most Precious Island Resource. Grades 7-12. **UNIHI-Seagrant-AP-96-01.** Poster. 1996.
The poster includes a discussion/activity for students grades 7-12 relating to the water cycle and reinforces how fragile water sources are on our earth.

www.soest.hawaii.edu/SEAGRANT/kids/main.html Web Page.
This web page is designed for students grades 6-8. The page includes marine-related information.

Ordering Instructions: Mail checks, payable to RCUH, to:
University of Hawaii
Sea Grant College Program
Communications Office
1000 Pope Road, MSB 200
Honolulu, HI 96822

The Hawai'i Guide to Alternatives & Disposal of Household Hazardous Wastes

State of Hawaii
Department of Health
Environmental Health Administration

Illinois-Indiana Sea Grant College Program

Purdue University
1159 Forestry Bldg.
W. Lafayette, IN
47907-1159
(765) 494-3573

University of Illinois
65 Mumford Hall
1301 W. Gregory Dr.
Urbana, IL 61801
(217) 333-9448

The Zebra Mussel Mania Traveling Trunk. Grades 3-8. Introduces young people to the problems caused by the spread of zebra mussels in our nation's waterways and to problems caused by other nonindigenous species. Introduces students to the fun of science and acquaints them with real scientific methods, while enhancing educational skills in other subjects areas. It includes 10 hands-on activities, including experiments, games and stories. Clear instructions are provided for teachers to use the materials and apparatus found in this Traveling Trunk. An accompanying teacher resource portfolio provides background reading and several video programs to familiarize educators with this subject.

Getting Started in Freshwater Aquaculture. Grades 9-12. **CD-AS-2**. CD-ROM. $49.99. Introduces future aquaculturists to the areas they must consider when embarking on such a career. It focuses on the aspects of biology, the water quality of production systems, marketing and business planning.

Testing Dissolved Oxygen Using the Winkler Method. Grades 9-12. **CD-AS-1**. CD-ROM. $15.00. Deals with water quality, one of the most fundamental areas of aquaculture. Comprehension of basic water chemistry is critical to maintaining healthy fish, and dissolved oxygen has been determined by high school instructors to be the most important of the 10-15 routine water quality parameters. Although this CD-Rom primarily targets secondary educators and students, new producers will also find it helpful.

Teaching About the Great Lakes through the Great Lakes Information Network (GLIN). Grades K-12. **IL-IN-SG-95-7**. 1995. 4 pp. Free.
Leading Edge fact sheet offers instructions on accessing the Great Lakes Information Network as a resource, with teaching suggestions.

Ilinois-Indiana Sea Grant College Program Website. Grades 6-12/Higher education. www.ansc.purdue.edu/il-in-sg/
Offers information (publications, news updates, events) on coastal and water-related issues including water quality, aquaculture, biological resources, sustainable coastal development, and coastal processes.

Aquaculture Network Information Center (AquaNIC) Website. Grades 6-12/Higher education. www.ansc.purdue.edu/aquanic/
A gateway to the world's electronic resources in aquaculture. Offers publications, newsletters, multimedia, Internet sites, news, species lists, and discussion groups.

The Sea Grant Nonindigenous Species Website (SGNIS). Grades K-12 /Higher education. www.ansc.purdue.edu/SGNIS/
This site is a peer-reviewed national information center that contains a comprehensive, searchable collection of education materials and research publications produced by the National Sea Grant College Program. It includes training and education materials, newsletters, distribution maps, a Sea Grant Graphics Library of slides, illustrations, videos and research findings with links to local Sea Grant personnel and related Web sites.

Sea Grant Nonindigenous Species (SGNIS) Website Mousepad and User ID Card. Grades K-12/higher education. **IL-IN-SG-96-10**. Free (while supply lasts). Provides general website information on accessing nonindigenous species research and outreach information, includes website address. 1996.

Wetlands are Wonderlands. Grades 6-8. Christine H. Pennisi, Marvin E. Hubbell, Pam Tazik and Dave Turner. 16 pp. (teacher guide), 30 pp. (student guide). Suggests entertaining indoor and outdoor activities, reading material and discussions through which young people can learn the importance of wetlands and how to protect them. **IL-IN-SG-E-92-1**. $4.50 per set. (One teacher guide and one student guide). **IL-IN-SG-E-92-1(M)**. $1. (Additional student guides).

Wetlands are Wonderlands
Leader/Teacher Guide

The Zebra Mussel Mania Curriculum Guide. IL-IN-SG-95-2C. $45.00.

The Zebra Mussel Mania Teacher Portfolio. IL-IN-SG-95-2P. $35.00.

The Zebra Mussel Mania Complete Trunk. IL-IN-SG-95-2T. $400.00.

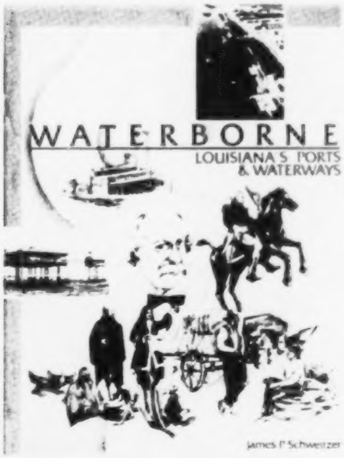
Ordering Instructions (except for CD-ROMs): Send requests, with checks payable to the University of Illinois, to the attention of Robin Goettel at:
Illinois-Indiana Sea Grant College Program
University of Illinois
65 Mumford Hall
1301 W. Gregory Drive
Urbana, IL 61801
goettel@uiuc.edu

Ordering Instructions for CD-ROMs: Send check payable to Purdue University, to the attention of LaDon Swann at:
Illinois-Indiana Sea Grant
Purdue University
1026 Poultry Science Bldg.
W. Lafayette, IN 47907-1026
lswann@www.ansc.purdue.edu

Louisiana Sea Grant

Louisiana State University
Baton Rouge, LA 70803-7507
(504) 388-6448

Waterborne! Louisiana's Ports and Waterways. Grade 8. J. Schweitzer. **LSU-E-84-001.** 58 pp., with illustrations, maps, index and bibliography. $5.00.
Intended as a supplement in eighth-grade Louisiana history courses, this book traces the history and development of ports and water transportation in Louisiana.



Common Vascular Plants of the Louisiana Coastal Marsh. General Interest. R. Chabreck and R. Condrey. **LSU-T-79-003.** 120 pp. $7.00.
Contains physical descriptions and line drawings of Louisiana's common marsh plants. A map plots where they commonly occur. Alphabetized by species, the book contains a list of plants by families, a glossary and an index. Reference for biology and botany teachers and students.

Wild Louisiana - Aquatic Activities for Environmental Science. Grades 8-12. L. Soniat. **LSU-E-90-001.**
Combines print materials and videos in a series of five activities for high school environmental science classes. Topics are specific to Louisiana but illustrate universal science concepts. Units are entitled: Vanishing Wetlands; Gata Data; Redfish: A Culinary Controversy; Teds, Turtles, and Shrimpers: Sharing an Ecosystem; and Preservation vs. Conservation: A Case Study. For information about availability, contact Louisiana Sea Grant at (504) 388-6343.

Project Tellus: Interactive Video Lessons for Middle-School Students on Global Change Issues Related to the Gulf of Mexico Region. Grades 6-8. L. Soniat and S. Duggan.
Contains six teaching modules, each with an 18- to 25-minute interactive video and a teacher's video guide with learning objectives, background information, vocabulary, previewing and postviewing discussion questions, extension activities, teacher instructions and student worksheets. Topics:

- Tellus About Science
- Biodiversity
- Exotic Species
- Water Quality
- Climatic Change
- Overpopulation

Distributed through teacher training workshops by the Gulf of Mexico Sea Grant programs - Louisiana, Texas, Mississippi-Alabama and Florida. Illustrated. Contact these programs for information about availability.

Coast & Sea: Marine and Coastal Research in Louisiana's Universities. General Interest. E. Coleman & M. Barrett, editors. Quarterly research magazine free upon request.
Contains articles about a variety of coastal and marine research in Louisiana's universities, including aquaculture, wetland ecology, fisheries, oceanography and coastal and marine geology. Illustrated with photographs and drawings.

Ordering Instructions:
If required, make check payable to Louisiana Sea Grant. East Baton Rouge Parish residents add 7 percent sales tax; other Louisiana residents add 4 percent.

Louisiana Sea Grant
Louisiana State University
Baton Rouge, LA 70803-7507

COMMON VASCULAR PLANTS OF THE LOUISIANA MARSH

Maine/New Hampshire Sea Grant College Program

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University of Maine
Orono, ME 04469-5715
(207) 581-1440

Sea Grant Communications
Kingman Farm
University of New Hampshire
Durham, NH 03824
(603)749-1565

Adopt-A-Salmon Family. Grades 7-8. **UNHMP-B-SG-96-19.** Free.
This brochure describes a watershed education program for middle schools available through the U.S. Fish & Wildlife Service.

Anadromous Fish of the Northeast. Grades 7-12, Adult. Steve Adams and Robert Sousa. **UNHMP-P-SG-90-14.** $5.00.
This five-color poster provides basic information on anadromous fish as well as specific information on and illustrations of five species.

Clean Water from the Mountains to the Sea. Grades 7-12/Adult. Mary Cerullo and Michael Lewis. **UNHMP-B-SG-92-15.** Free.
This full-color brochure covers the many habitats that rivers flow through on their way from the mountains to the sea and reports on the work that's being done to keep them clean.

Coastal Issues: A Wave of Concern. Grades 9-12. Sharon Meeker. **UNHMP-AR-SG-91-5.**107 pp. $15.00.
An interactive curriculum on issues affecting coastal areas, with a variety of activities for high school students.

Day of the Coast Celebration. Grades K-8. Sharon Meeker. **UNHMP-AR-SG-95-9.** 15 pp. $1.00.
How to plan a stimulating all-school day of marine activities involving volunteers, people from the community, teachers, and students.

Gathering Waters: The Great Bay Watershed and You. Grades 7-12, Adult. Robert Michelson. **UNHMP-V-SG-96-17A**, $15.00; **UNHMP-V-SG-96-17B**, $10.00.
This video, available in 30- and 15-minute versions, deals with the sources of and solutions to the problem of non-point source pollution.

The Great Bay, A Living Laboratory. Grades 7-12. Sharon Meeker. **UNHMP-AR-SG-91-2.** $15.
A field-based curriculum featuring onshore and offshore components.

The Great Bay: New Hampshire's Treasure. Grades 7-12, Adult.

Salt Marshes: Nurseries of the Sea. Grades 7-12, Adult.

The Great Bay Research Reserve. Grades 7-12, Adult. Sharon Meeker. $75.00 each.
These are slide script programs.

The Great Bay Watch: A Citizen Monitoring Program Manual. Grades 9-12, Adult. Sharon Meeker, Ann Reid, et al. **UNHMP-AR-SG-96-7.** $15.00.
This 91-page manual contains how-to information for sample collection, supplies and equipment needs, and sample data sheets.

Marine Science Careers: A Sea Grant Guide to Ocean Opportunities. Grades 7-12, Adult. Steve Adams and Tracey Crago. **UNHMP-AR-SG-96-1.** $5.00.
This comprehensive, 40-page guide provides information on careers in marine biology, oceanography, ocean engineering, and closely related fields as well as question-and-answer profiles of 38 marine professionals.

Sea Grant Marine and Coastal Environmental Education Programs. Grades K-12, Adult. **UNHMP-B-SG-96-8.** Free.
This brochure presents an overview of the education programs available through the Maine/New Hampshire Sea Grant College Program.

Stop the Zebra Mussel. Grades 7-12, Adult. **UNHMP-B-SG-93-19.** Free.
This brochure contains basic information on zebra mussels and on methods for preventing their spread.

STOP
the zebra mussel

Northern New England ZEBRA MUSSEL Watch

Return from the Sea: The Restoration of American Shad to the Atlantic Coast. Grades 7-12, Adult. Robert Michelson. **UNHMP-V-SG-94-19.** $15.00.
This 30-minute video covers the work being done to restore the American Shad to its native range along the East Coast.

Great Bay Watch: Processing Fecal Coliform Samples. Grades 9-12, Adult. **UNHMP-V-SG-96-2.** $12.00.
This 13-minute video describes and demonstrates the analysis of fecal coliform samples.

Return from the Sea: The Restoration of Atlantic Salmon to New England. Grades 7-12, Adult. Robert Michelson. **UNHMP-V-SG-91-20.** $15.00.
This 30-minute video covers the Atlantic salmon restoration effort in the Northeast.

UNH Floating Lab Resource Manual. Grades 7-12. Sharon Meeker and Michael Brody. **UNHMP-AR-SG-83-3.** Revised 1992. 207 pp. $15.00.
An oceanographic curriculum focused on the New England coast, but readily adaptable to other regions.

Ordering Instructions for all above publications:
Please make checks payable to UNH and add $1.00 for shipping and handling ($3.00 on foreign orders). Send orders to:
Sea Grant Communications
Kingman Farm
University of New Hampshire
Durham, NH 03824-3512

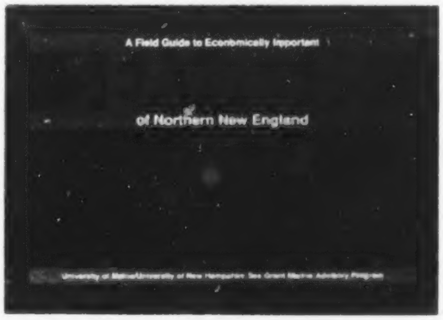
Ordering Instructions for all of the following publications:
Mail check, payable to the University of Maine, and mail to: Sea Grant Communications
University of Maine
5715 Coburn Hall #21
Orono, ME 04469-5715

Aquaculture in Maine: A Curriculum Guide for Secondary School Teachers. Grades 7-12. Susan White, editor. **MSG-E-96-9.** 1997. 160 pp. $15.00.
Provides background information and activities on aquaculture in Maine, the United States and around the world; aquatic ecology; water quality testing; starting an aquaculture business; setting up an aquarium; and culturing algae and shellfish in the classroom. Each of the ten chapters includes key concepts, a lesson overview and learning objectives.

Atlantic Salmon Information Cutout. General Interest. Susan White, editor. **MSG-E-95-10.** 1996. Free.
A colorful, salmon-shaped cutout with questions and answers about Atlantic salmon habitat, behavior, life cycle, and hatcheries and fish farms in Maine.

Field Guide to Economically Important Seaweeds of Northern New England. General Interest. Susan White, editor; MaJo Keleshian, illustrator and designer. **MSG-E-93-16.** 1993. 30 pp. $3.50.
Includes illustrations and descriptions of selected seaweeds of the Maine/New Hampshire coast plus suggestions on foraging, preparation, and recipes for some of the more commonly used species.

The Maine Seacoast. General Interest. Sherman Hasbrouck and Kathleen Ellis. **MSG-E-94-13.** 1994. 16 pp. $2.00.
Originally produced in 1986, this updated digest includes a discussion of Maine's new marine resource industries sea urchins, seaweeds, and aquaculture, and a brief overview of the current crisis in the state's traditional commercial fisheries.


A Field Guide to Economically Important
of Northern New England
University of Maine/University of New Hampshire Sea Grant Marine Advisory Program

Videotapes: All videotapes are available in 1/2" VHS format.

The Cultured Clam: Raising Soft-Shell Clams Downeast. Grades 7-12, General Interest. **MSG-VT-92-1.** 17 minutes, color, sound. $12.00.
Focuses on the Beals Island Regional Shellfish Hatchery, the first shellfish management program in the country using hatchery-reared, soft-shell clam juveniles. The video demonstrates the steps involved in the program from spawning adult clams to seeding juveniles on clam flats and presents one management option available to towns to replenish their depleted stocks.

University of Maryland

Sea Grant College Program
0112 Skinner Hall
College Park, MD 20742
(301) 405-6377

Marine Science Education Workbooks: Tides and Marshes. Grades 6-8. Jack Greer, ed. **UM-SG-ES-79-01.** 37 pp. $4.00.
The workbook is aimed at middle school/high school students, though teachers and group leaders may find a wider application for materials. Each workbook contains a Teacher's Narrative, a Student Activities Section and a Resource Section. Figures include diagrams of intertidal zones, tidal effects on vegetation and the moon's effect on tides.

Marine Science Education Workbooks: Food Webs in an Estuary. Grades 6-8. Jack Greer, ed. **UM-SG-ES-79-02.** 26 pp. $4.00.
The workbook introduces the subject of food chains and food webs, using elementary examples from an estuarine system. Although the focus is on the Chesapeake Bay, the material may be adapted to any similar estuarine environment. Figures include diagrams of simple food chains.

Marine Science Education Workbooks: The American Oyster. Grades 6-8. Jack Greer, ed. **UM-SG-ES-79-03.** 57 pp. $4.00.
The American Oyster, once Maryland's most valuable seafood, serves as the subject of this workbook, a marine science mini-unit aimed at middle school students. The workbook includes a number of figures; diagrams of oyster anatomy, salinity charts, harvest graphs and charts showing the location of oyster bars and the range of oyster predators. There are also pictures of harvesting devices and descriptions of the Chesapeake Bay oyster fishery.

Decision Making and the Chesapeake Bay. Grades 9-12. Emmett L. Wright. **UM-SG-ES-85-01.** 220 pp. $14.95.
This curriculum unit focuses on the Chesapeake Bay as both a political and ecological watershed. Aimed primarily at high school science or social studies classes, it provides a significant amount of information about the Chesapeake Bay, while involving students in a simulated decision-making process.

Issues for the Chesapeake. Grades 9-12. Jack Greer. **UM-SG-ES-91-01.** 24 pp. $2.00.
This two-color, magazine-style booklet is primarily aimed at high school students. It contains sections on the geological, biological and social history of the Chesapeake Bay and its major commercial species. Two sections address the question "What Is Environmental Health?" and "The Future of the Chesapeake Bay." Each section contains thought-provoking questions, as well as time lines, sidebars and illustrative photographs.

Invisible Seas. Grades 9-Adult. Michael W. Fincham. UM-**SG-AV-82-02.** 30 minutes. $24.95.
This half-hour film describes the exciting world of marine microbiology, with footage of both ocean (off Puerto Rico) and estuarine (Chesapeake Bay) environments. An interesting narration describes why microbes, though invisible to the unaided eye, play such an important role in the ecology of the seas.

Chesapeake: The Twilight Estuary. Grades 9-Adult. Michael W. Fincham. **UM-SG-AV-85-02.** 40 minutes. $24.95.
This award-winning film documents how scientists unlocked the key to the Chesapeake's tragic decline. It provides an excellent example of how scientific research cannot only identify a specific problem (in this case the decline of the underwater grasses in the Chesapeake Bay) but can also point toward the need for wide-ranging policies needed to solve it.

Watershed for the Chesapeake. Grades 9-Adult. Michael W. Fincham. **UM-SG-AV-92-01.** 60 minutes. $24.95.
This hour-long documentary follows a waterman, a politician, a scientist and a farmer as they come to grips with the failing water quality of the Chesapeake Bay. The film describes how bold efforts on single rivers - especially the Patuxent - helped to lead to a Baywide effort to better manage the watershed and restore the Bay.

Keeping Score. Grades 9-Adult. Michael W. Fincham. **UM-SG-AV-91-01.** 18 minutes. $14.95.
This video, narrated by the well-known fishing expert Lefty Kreh, encourages anglers to use catch-and-release fishing techniques, and to find a new way to "keep score" when fishing. This video is useful in the teaching of a new environmental ethic, especially in locations where fishing is a part of life, even if just during seasonal vacations.

Fishing for a Future. Grades 9-Adult. Michael W. Fincham. **UM-SG-AV-93-01.** 30 minutes. $14.95.
This video describes catch-and-release fishing in coastal waters and includes footage of big gamefish, including tuna

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and shark. Like its companion video, Keeping Score, Fishing for a Future emphasizes the problem of overfishing and calls for a new environmental ethic.

Striped Bass Aquaculture. Grades 9-Adult. Merrill Leffler. 20 minutes. $14.95.
There are currently three videos in this series: Raising Fish in Ponds, Net-Pen Culture and Striped Bass Hatcheries. Intended for those who are considering raising fish for profit, the videos are also of use to students and teachers interested in aquaculture and raising fish in varying environments.

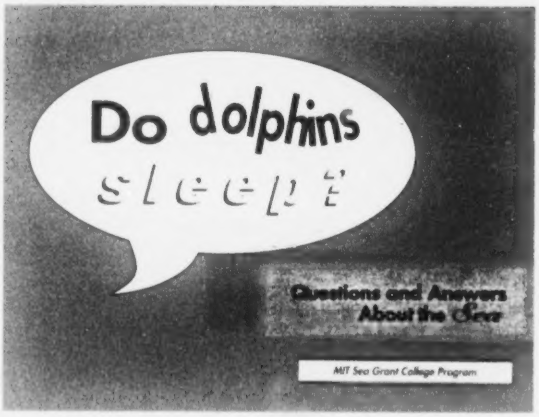
Alien Ocean. Grades 9-Adult. Michael W. Fincham. **UM-SG-AV-97-01.** 30 minutes. $24.95.
Alien Ocean details the invasion of non-native mussels, crabs and other species that have colonized many lakes, rivers and coastal ecosystems across the country and around the globe.

Ordering Instructions: Please make checks payable to the University of Maryland. Send request with check to:
Communications
University of Maryland
Sea Grant Program
0112 Skinner Hall
College Park, MD 20742

27

Massachusetts Institute of Technology

Sea Grant College Program
Room E38-300
77 Massachusetts Avenue
Cambridge, MA 02139
(617) 253-7041


Do dolphins sleep?
Questions and Answers About the Sea
MIT Sea Grant College Program

Stellwagen Bank National Marine Sanctuary Monitoring Plan. Higher education. R. Michael Lohse and Judith T. Kildow, eds. **MITSG-96-16.** 122 pp. $12.00.
This document is a proposed plan for a monitoring system to be used by the Stellwagen Bank National Marine Sanctuary. The monitoring system includes the tools, instruments and indicators necessary to assess the condition of the ecosystem. The monitoring plan is the coordinated implementation and use of this monitoring system in the Sanctuary, which provides a habitat for numerous commercial species and endangered migratory mammals, while also supporting several commercial activities.

Citizen's Guide to Sources for Marine and Coastal Information in Massachusetts. Grades K-12/General interest. Compiled and edited by Madeleine Hall-Arbor. **MITSG-93-26.** Sixth edition revised. 179 pp. $5.00.
This valuable reference book lists more than 175 Massachusetts agencies, information centers and organizations concerned with coastal affairs. Each entry includes office hours, address, and telephone number, as well as a brief description of the objectives, specialties and services of each organization. A subject index provides easy reference by area of interest.

The Boston Harbor Sewage Stack. Carolyn Levi. 92-13. NTIS: **PB93-504835.** 1 Disk. $20.00 ($5.00 or blank disk and SASE for educators and non-profits.)
The Boston Harbor Sewage Stack is an interactive educational computer program about how municipalities deal with sewage and how sewage systems work. It also deals with nonpoint source pollution and what citizens can do to help - focusing on Boston Harbor and the Boston Harbor Cleanup. Along the way, users encounter topics for exploration, including storm sewers and combined sewer overflows (CSOs); nonpoint source pollution from pets, spilled waste oil, lawn and garden chemicals and other sources; what not to flush and why; how officials can tell if water is polluted; and why it matters. Noises and animation are provided. The program is written for middle-school students, but it is also relevant for adults. The "Sewage Stack" is implemented on Hypercard for Macintosh computers and comes with a one-page teacher's guide.

Do Dolphins Sleep? Questions and Answers About the Sea. Grades K-5. Andrea Cohen. **MITSG-94-27.** 36 pp. $6.00.
Do dolphins sleep? How deep do fish live? Why are there waves in the ocean? The answers to these and other commonly asked, perplexing questions can be found in this publication. With questions gleaned from kids' letters to MIT Sea Grant and responses from marine experts around the country, this illustrated publication is perfect as a gift or classroom addition. If you are a kid (or adult) who's ever dreamed of being a dolphin trainer, or just wondered how pollution affects sea life, you'll want to check out this book.

Ordering Instructions:
Address requests to:
MIT Sea Grant College Program Publications
292 Main Street/Bldg E38-300
Cambridge, MA 02139

Michigan Sea Grant College Program

2200 Bonisteel
Ann Arbor, MI 48109
(313) 764-1138

Order the following three publications from: Michigan Sea Grant College Program, 220 Bonisteel, Ann Arbor, MI 48109

Fall Beachcombing. Grades 6-12 /Teachers at all levels. Suzanne Tainter and Martha L. Walter. **MICHU-SG-91-702.** $2.50, 10 or more $1.00. Describes the natural treasures that can be found on Great Lakes beaches including rocks, plants and animals and shells. Explains how beach sands are formed, the geological stories told by stones and fossils, the plants and animals found in each beach zone, and how plants adapt to harsh beach conditions. Recommends beachcombing clothing and equipment. Includes a list of books for more detailed information. Illustrated. Useful to teachers planning a beach walk or teaching natural history.

Upwellings. Grades 9-12, Teachers. Quarterly newsletter. Reports on Great Lakes issues, including the latest research and developments regarding the zebra mussel and other exotic species, Great Lakes fisheries research, news about pollution clean up, tourism, economic development, and education, and descriptions of recent publications.

Safe Use of Zebra Mussels in Classrooms and Laboratories. Grades 9-12. Thomas G. Coon. **MICHU-SG-93-703.** 2 pp. Free. Exotic species can be effective teaching tools. However, careless use of exotic species may result in a costly lesson - both in terms of repairs and adverse ecological consequences. This fact sheet explains several preventative measures for teachers and students to follow to avoid introducing zebra mussels into plumbing and inland waters.

Superior Today. Grades 9-12. **MICHU-SG-86-400.** 1985. Videotape. 3/4" $35, 1/2" $25.00. **Order from:** WNMU-TV, Northern Michigan University, Marquette, MI 49855-1222. An award-winning 30-minute documentary that explores the greatest of the Great Lakes - its physical dimensions and characteristics, formation and history, climate and weather, creatures, utilization, pollution and economic development.

A Field Guide to Great Lakes Coastal Plants. Grades 9-12. Walter Hoagman. 144 pp. **E-2449. MICHU-SG-94-500.** $7.95. **Order From:** MSU Bulletin Office, 10-B Agriculture Hall,
Michigan State University
East Lansing, MI 48824-1039. (517) 355-0240. Make checks payable to Michigan State University. * Multiple copy discounts are available from MSU Extension-Iosco County, (517) 362-3449.
This guide gives nature lovers and observers, teachers and tourists answers to their questions about shoreline plants and explains how different plants live in the various shoreline environments, how shorelines are created and destroyed, and basic shoreline law. Pen-and-ink drawings descriptive text and clever memory aids make identifying the 110 most commonly found Michigan Great Lakes plants fun and easy.

Order the following publications from: Michigan Sea Grant Extension, 334 Natural Resources Building, Michigan State University, East Lansing, MI 49855-1222.

The Trouble with Toxics. Grades 9-12. **MICHU-SG-87-401.** 1987. Videotape. 3/4" $75.00, 1/2" $35.00. This 30-minute documentary presents the challenge of dealing with the hundreds of contaminants in the Great Lakes with information about sources of toxic substances, their chronic effects, fate and control, management of fisheries, public policy and prevention strategies.

* **The Life of the Lakes: The Great Lakes Fishery.** An educational package about the world's greatest freshwater fishery. **(E2476)** Complete Package $40.00 - * denotes items included in complete package. U.S. Individual components can also be purchased. Canadian orders add 15 percent for postage and handling. Orders under $100 must be prepaid. Make checks payable to Michigan State University. Package includes the following:

* **The Life of the Lakes: The Great Lakes Fishery. (VT44)** $25.00. A 55-minute award-winning, broadcast-quality video that portrays the Great Lakes fishery today, describing how it has changed since the Great Lakes were formed and presenting the challenges the fishery faces in the future.

* **The Life of the Lakes: A Guide to the Great Lakes Fishery. (E2440).** $7.50. A comprehensive background book to supplement the video, with inserts about fish species of the lakes, historical developments of the fishery, and a map of the Great Lakes.

- * **The Life of the Great Lakes: A Guide to Great Lakes Fishery Education Materials. (E2441).** First copy available only as part of complete package.
  A supplemental curriculum guide with video discussion topics, hands-on learning activities, and a listing of other materials.

- * **Life of the Lakes Posters. (E2475).** $7.50 per set. $1.50 for individual posters: **Superior (E2442). Michigan** (E2443), **Huron (E2444)**, Erie **(E2445), Ontario (E2446), Great Lakes Basin** (E2447).
  A set of posters, featuring maps of each lake and the Great Lakes Basin, with text describing the lake's fishery and illustrations of some of the Great Lakes fishes.

Minnesota Sea Grant Program

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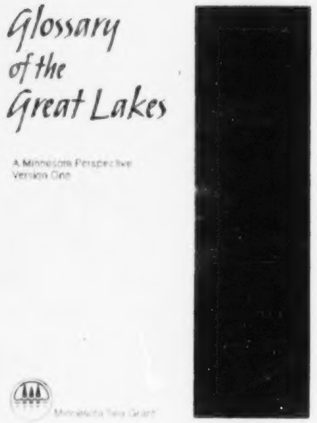
2305 E. 5th St.
Duluth, MN 55812-1445
(218) 726-6191; FAX: 218-726-6556
E-mail: seagr@d.umn.edu
Web: www.d.umn.edu/seagr/

A Family Guide to Minnesota's North Shore. Grades 5-Adult. **T3**. 56 pp. $4.95. (Bulk price $2.50).
This guide will introduce you to historic places, unique environments, and the sheer beauty of the North Shore. It can be used in the classroom to provide the history, scenery, and geology of the North Shore of Lake Superior.

A Field Guide to Aquatic Exotic Plants and Animals. Grades 5-Adult. **X9**. 8 pp. Free.
Features photos, drawings, and descriptions of ruffe, zebra mussels, spiny water flea, Eurasian watermilfoil, purple loosestrife, plus brief descriptions of carp, lamprey, rusty crayfish, white perch, flowering rush, and curly-leaf pondweed.



Glossary
of the
Great Lakes

A Minnesota Perspective
Version One

Minnesota Sea Grant

The Edge of the Arrowhead. Grades 5-Adult. **T2**. 60 pp. Free.
Thumbnail sketches and pictures tell the history of the North Shore of Lake Superior. The Edge of the Arrowhead explores the Minnesota coast: its setting and history, its problems and potentials.

Glossary of the Great Lakes. Grades 5-Adult. **G1**. 71 pp. $4. (Bulk price $3.50).
Provides a quick and easy reference to the multitude of programs, initiatives, regulations, and terms dealing with Great Lakes issues.

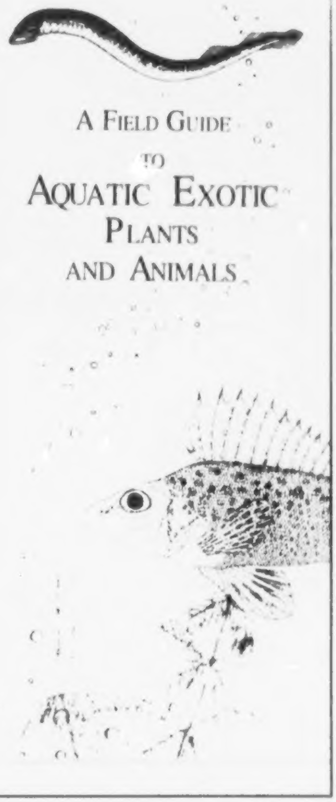
The Lake Superior Game. Grades 4-Adult. **S3**. 18 pp. Free.
The game takes about an hour and teaches players about the hard choices that must be made every day if Lake Superior is to be preserved. It is ideally played by 10 to 30 people and may be used with upper-elementary to adult audiences.

Superior Pursuit: Facts About the Greatest Great Lake. Grades 5-Adult. **S4**. 6 pp. Free.
Lake Superior is a constant source of wonder. The lake helps shape the climate, landscape, economy, and quality of life along the shore. Superior Pursuit gives some facts about Lake Superior that explain the unique qualities of this inland sea.

The Lake Game. Grades 4-Adult. S1. 18 pp. Free.
The game takes about an hour and teaches players about the hard choices that must be made every day if our lakes are to be preserved. It is ideally played by 10 to 30 people and may be used with upper-elementary to adult audiences.

Ordering Instructions: All orders must be prepaid. Mail check payable to University of Minnesota to: Minnesota Sea Grant Program, University of Minnesota, 2305 E. 5th St. Duluth, MN 55812-1445

Exotic Aquatics and Zebra Mussel Mania Traveling Trunks Brochure. Grades 4-9. **X38**. 8 pp. Free.
This brochure describes the different components of the Exotic Aquatics Traveling Trunk and the Zebra Mussel Mania Traveling Trunk. These trunks are two learning kits available for loan or purchase that teachers can use to instruct students about the problems harmful invading species pose.



A Field Guide
to
Aquatic Exotic
Plants
and Animals

Mississippi-Alabama Sea Grant Consortium

703 East Beach Drive
P.O. Box 7000
Ocean Springs, MS 39566-7000
(228) 875-9341

Alabama's Artificial Reefs. Grades 8-Adult. **MASGP-94-006.** Free.
This brochure describes how artificial reefs work, reviews the history of Alabama's artificial reef program and lists Loran-C readings of public reefs.

Coastal Wetlands of Alabama. Grades 8-Adult. **MASGP-91-020.** Free.
This brochure includes explanations about what constitutes wetlands, the extent of Alabama wetlands, their value, and measures to protect them.

Blue Crabs in Alabama. Grades 8-Adult. **MASGP-92-008.** Free.
This brochure briefly outlines the identification, biology, management and culinary characteristics of the blue crab, the only commercially harvested crab among the 60 or more species of crabs found in Alabama waters.

Flatfish in Alabama. Grades 8-Adult. **MASGP-91-020.** Free.
This brochure describes what is known about the life cycles of a variety of Northern Gulf flounders and other flatfish.

Jellyfish in Alabama. Grades 8-Adult. **MASGP-94-028.** Free.
Jellyfish are regular inhabitants of the saltwater bays, bayous and Gulf beaches of Alabama. This brochure provides a brief overview of the seven species common to the Northern Gulf: characteristics, treatment for jellyfish stings, and life cycles.

The Jubilee Phenomenon. Grades 8-Adult. **MASGP-93-013.** Free.
This pamphlet gives an overview of the basic cause of jubilees, conditions that favor their occurrence and observations associated with them.

Life History of Red Snapper. Grades 8-Adult. **MASGP-94-015.** Free.
This brochure gives an overview of the red snapper life cycle and the need for conservation of this popular species. The author also briefly outlines current scientific debates over how to explain increased catches of red snapper around artificial reefs and the range of the red snapper migration. He provides possible explanations based on ongoing tag and release studies.

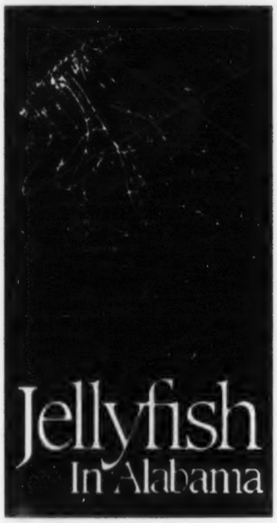
Global Jigsaw. Grades 6-Adult.
A series of eight-page publications each featuring a single global change issue and two to three classroom teaching activities. Cosponsored with Gulf Research Laboratory and J.L. Scott Marine Education Center and Aquarium, the series covers eight topics on global change.

Avoiding the Tragedy of the Commons. Grades 6-Adult. **MASGP-95-012-01.** Free.
This first issue of the Global Jigsaw examines the overpopulation issue. The activities of human beings, especially large numbers of human beings, impact the resources required to sustain life. Essays examine the impact of exponential population growth and discuss the responsibility teachers should take in addressing population growth as it relates to the environment.

The Ozone Story. Grades 6-Adult. **MASGP-95-012-02.** Free.
This issue of Global Jigsaw looks at ozone layer depletion. Articles address the topic of ozone depletion as a series of questions with answers that, when put together, will allow understanding of the basics as well as provide perspectives on the responsibility individuals should take in addressing ozone layer depletion as it relates to the environment.

Deforestation: Losing Ground. Grades 6-Adult. **MASGP-95-012-03.** Free.
The topic of deforestation is looked at with insight into the total assessment of what has been lost, the rate at which it has been lost, what can be done to prevent further destruction and the responsibility individuals should take in addressing deforestation issues. The three lesson plans provide activities that will help middle-school students understand habitat destruction due to deforestation and the impact that humans have on their surroundings.

Auburn University
Marine Extension
& Research Center
SEA GRANT EXTENSION



Biodiversity: A Matter of Survival. Grades 6-Adult. **MASGP-95-012-04.** Free.

This issue looks at biodiversity, the broad variety of living things and their habitats. The main feature article defines the exact meaning of biodiversity, according to species, genetics and ecosystems and how biodiversity increases the quality of life for all living things. The subject of stewardship is also approached with examples of how humans can be better trustees of the environment. The teaching activities will help middle-school teachers introduce biodiversity into their science curriculum.

Acid Rain, Poisonous Plight. Grades 6-Adult. **MASGP-96-012-01.** Free.

Our planet is paying the price as increasing amounts of airborne pollutants that are released into the atmosphere. One essay outlines the chemical makeup of the acids and ties this basic chemistry in with the formation and ecological effects of acid rain. The commentary on stewardship provides "pollution solutions" for decreasing the amounts of pollutants that are being released into the environment. Fun and thorough teaching activities were developed to help familiarize students with the seriousness of acid rain and strengthen their knowledge of the makeup and characteristics of acids.

Pollution Primer - Marine and Estuarine Pollution. Grades 6-Adult. **MASGP-96-012-02.** Free.

Pollutants cause serious damage to the atmosphere, water, soil, sediment and plants and animals. This issue of Global Jigsaw looks at the effects point and nonpoint sources of pollutants have on marine and estuarine resources. Global pollution with regard to the fragility of estuarine environments is addressed. Environmental stewardship tips are given on what can be done to protect valuable marine resources. The lesson outlines will help teachers incorporate marine and estuarine pollution topics into their science, social studies and language curriculums.

Greenhouse Gases, A Silent Menace. Grades 6-Adult. **MASGP-96-012-03.** Free.

This issue of Global Jigsaw looks at what greenhouse gases are, how they react atmospherically and how they can be reduced. The "Environmental Stewardship" section gives a global view on what is being done to reduce emissions worldwide, and gives tips for being good stewards of planet Earth. The lesson outlines provide teachers with resources to incorporate global warming concepts into life, environmental and earth science and ecology curricula.

The Sea Level Rise Puzzle. Grades 6-Adult. **MASGP-96-012-04.** Free.

Sea level rise could have a tremendous impact on coastal communities. Drinking water, ecosystems and shorelines could be damaged or destroyed through saltwater intrusion. This issue of Global Jigsaw presents scientific, societal and educational material on the effects of sea level rise and what can be done about it. Creative, hands-on activities have been developed for teachers to help acquaint students with sea level rise issues.

Guide to Common Tidal Marsh Invertebrates of the Northeastern Gulf of Mexico. Grades 12-Adult. **MASGP-79-004.** $8.00.

This 82-page book fulfills a need in literature by providing a well-illustrated, up-to-date identification guide for marine macroinvertebrates that live or occur in the salt marshes along the Mississippi-Alabama coast and adjacent areas of Florida and Louisiana. Includes a color plate showing eight varieties of crabs.

Man and the Gulf of Mexico Educational Series. Grades 10-12. **MASGP-82-007.** $7.50 each. Volumes 1 and 4 are out-of-print, but photocopied copies are available. Volumes 2 and 3 are still available.

This series is composed of four paperback books (8.5-by-11 format) that can be used individually or as a set. Each is a textbook-workbook with general and specific objectives for each unit, vocabulary exercises, diagrams, many illustrations and instructions for experiments. The series can be used as textbooks for marine sciences courses, as supplements for introductory biology classes, or as library reference books.

Marine and Estuarine Ecology, Volume 1. Grades 10-12. 88 pp., illustrated $7.50.

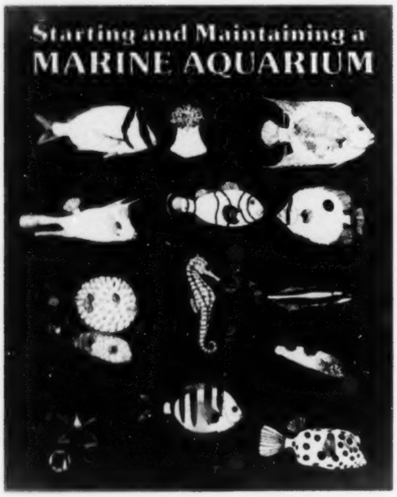
An introduction to fundamental concepts and the vocabulary needed for understanding the ecology of marine environments, this volume emphasizes the diversity and dynamics and demonstrates the interdependency of living organisms. Plankton, nekton, intertidal and coastal organisms and coastal habitats are given careful examination. Special attention is given to instructing students in recording data accurately and logically and in making sound generalizations. This volume also acquaints students with basic equipment for studying marine life.

Marine Habitats, Volume 2. Grades 10-12. 88 pp., illustrated. $7.50.

This text introduces five marine habitats - salt marsh, mud flat, sound, beach and barrier island - and presents general information about the organisms that live in each. It emphasizes the interdependency of plants and animals and compares and contrasts the manner in which these organisms adapt themselves to their habitats.

Diversity of Marine Plants, Volume 3. Grades 10-12. 135 pp., illustrated. $7.50. This volume explains the biological classification system and the process of photosynthesis. Eleven experiments investigate seven types of algae, marine bacteria, sea grasses and salt marsh plants.

Marine Animals, Volume 4. Grades 10-12.126 pp., illustrated. $7.50. This book introduces the physical characteristics, the behavior and the natural environment of a variety of marine animals. Included are protozoans, sponges, coelenterates, ctenophores, polychaetes (marine annelids), mollusks, echinoderms, marine crustaceans (barnacles, blue crabs, hermit crabs, shrimp and horseshoe crabs), sea squirts, and tunicates, sharks, and stingrays (cartilaginous fish), seashore birds, marine turtles and marine mammals. This volume includes extensive illustrations and offers students fifteen activities for identifying and learning about marine animals and their adaptive behavior.



Mississippi Marine Resources Pilot Manual. Grades 6+. **MASGP-81-002.** Free. This 16-page, illustrated manual provides an overview of both marine and fresh water including planktonic forms, dunes and vegetation. There are ten concepts and/or activities that would be applicable for middle and secondary students.

Mississippi Ocean Policy Study. Grades 12-Adult. **MASGP-91-010.** Free. This 132-page volume introduces the physical and cultural setting of the Mississippi coastal region and examines the societal, economic and environmental aspects of 11 major policy issues. Discussion of each issue also includes information about the management framework in the state, federal and international context. Methods for initiating a comprehensive state management program are outlined with model legislation provided.

A Preliminary Guide to Demersal Fishes of the Gulf of Mexico Continental Slope (100 to 600 fathoms). Grades 10-Adult. **MASGP-86-009.** $2.00. Since fishery biologists along with commercial and recreational fishermen are exploring and exploiting the deeper waters of the Gulf of Mexico more than ever, this 96-page pictorial guide is a "first step" in making these deepwater fish better known. This guide identifies fish from 100 to 600 fathoms.

Starting and Maintaining a Marine Aquarium. Grades 6-Adult. **MASGP-81-001.** Free. This 23-page booklet outlines the basic steps in establishing a saltwater aquarium. Detailed instructions are given on the materials needed, food preferences, artificial seaweed, filter systems, suggested animal combinations, water maintenance and potential problems.

Tidal Marsh Plants. Grades 12-Adult. **MASGP-77-039.** $25.00. (Available from Gulf Coast Research laboratory, Attn: Ms. Ramona Spen). This is a resource book about the tidal marshes of coastal Mississippi. This field guide includes only those plant species known by the author to occur in the tidal marshes of Mississippi. It is an illustrated manual that is easily used as a filed guide in working in local tidal marshes.

Newsletters - Grades 10-Adult. The following are available free of charge at the present time. To be placed on the mailing list, write to the address listed.

Force Five. Grades 10-12. This semiannual newsletter highlights Sea Grant-supported research, education and advisory service activities. Contact: Mississippi-Alabama Sea Grant Consortium, P.O. Box 7000, Ocean Springs, MS 39566-7000.

Gulf Coast Fisherman. Grades 10-Adult. Offers the public, businesses and educational institutions current information related to commercial and recreational fishing and other marine activities. Cosponsored with the Mississippi Cooperative Extension Service and Mississippi State University. Contact: Mississippi Sea Grant Advisory Service, 2710 Beach Blvd., Suite 1-E, Biloxi, MS 39531.

Sea Harvest News. Grades 10-Adult. Presents information on fishing regulations, new technologies and business opportunities. Cosponsored with the Alabama Cooperative Extension Service and Auburn University. Contact: Alabama Sea Grant Extension Program, 4170 Commanders Drive, Mobile, AL 36615.

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Water Log. Grades 12-Adult. The purpose of this bulletin is to increase public awareness and understanding of legal issues affecting the region's coastal zone. Includes briefings on judicial cases. Cosponsored with The University of Mississippi Law Center. Contact: Mississippi-Alabama Sea Grant Legal Program, The University of Mississippi Law Center, University, MS 38677.

An Illustrated Guide with Key to Selected Benthic Invertebrate Fauna of the Northern Gulf of Mexico. MASGP-87-010. $20.00. (Order from Marine Environmental Sciences Consortium, Dauphin Island Sea Lab, P.O. Box 369-370, Dauphin Island, AL 36528.) This 162-page guide was designed primarily as an instructional manual for students of marine science and is also useful for individuals with a vocational or avocational interest in coastal ecology. The guide includes representatives of the major phyla which generally occur in bays, sounds and near-shore in a variety of subtidal habitats.

Ordering Instructions: Unless indicated otherwise order from: Mississippi-Alabama Sea Grant Consortium, 703 East Beach Drive, P.O. Box 7000, Ocean Springs, MS 39566-7000, (228) 875-9341. FAX: (228) 875-0528 E-mail: pubs@seahorse.ims.usm.edu Publications are also available on-loan from the National Sea Grant Depository: Pell Library Building, The University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882-1197
(401) 874-6114; FAX: (401) 874-6160
E-mail: nsgd2gsosun1.gso.uri.edu
Web Address: http://nsgd.gso.uri.edu

New Jersey Sea Grant College Program

New Jersey Marine
Sciences Consortium
Bldg. #22
Fort Hancock, NJ 07732
(908) 872-1300

Where the Land Meets the Sea: Exploring A Coast Activity Book and Teacher's Guide. Grades 3-4. A Galli and S. Levine. **NJSG-83-103.**

Where the Land Meets the Sea: Exploring A Coast Activity Book and Teacher's Guide. Grades 5-6. A. Galli. **NJSG-83-104.**

Marine Cuisine Series. Grades 8-Adult. G. Flimlin, K. Kosko and C. Teller. **NJSG-MC-No. 1-11. Free.** Single-page seafood fact sheets highlighting local species and regional species.

The Biology of the Hudson-Raritan Estuary. Grades 9-12. J.A. Tiedemann, et. al. **NJSG-97-354.** This special publication is a comprehensive curriculum designed for middle and high school teachers. It contains informative text, classroom activity plans and an extensive field guide to indigenous fish, birds and invertebrates of the Hudson-Raritan Estuary. Limited copies available.

Sea Note Series. Grades 8-Adult. J.A. Tiedemann and E. Bochenek. **NJSG-SN-No.1-12.** One-page bulletins featuring a diversity of topics on birding, fishing and environmental conservation related to marine and coastal recreation.

Young-Peoples Guide to Saltwater/Freshwater Fishing. Grades 4-12. E. Bochenek. **NJSG-97-356.** An informative handbook that introduces young people to fishing basics, with an emphasis on environmental stewardship. Includes chapters on fish facts and biology, habitats, fish tagging and pollution. Limited copies available.

Ordering Instructions: For information about "Where the Land Meets the Sea," Contact: The Wetlands Institute, Stone Harbor Blvd., Stone Harbor NJ 08247.

For all other materials, contact: New Jersey Sea Grant, Communications Office, Building 22, Fort Hancock, NJ 07732

New York Sea Grant Institute

121 Discovery Hall
SUNY at Stony Brook
Stony Brook, NY 11794-5001
(516) 632-6905
NYSeaGrant@ccmail.sunysb.edu

Aquatic Activities for Youth. Grades 4-8. H. David Greene. 50 pp. $4.00.
Educational materials consisting of eight units. Subjects include saltwater world in a jar, raising earthworms, fish aquarium, and entomology and water.

Aquatic Plants: Another World. Grades 8-12. H. D. Greene and M. W. Duttweiler. 1993. 12 pp. $3.50.
Terrestrial plants are obvious members of our communities. Although less obvious, aquatic plants, which live in and around water, are just as important as land plants. The activities in this book provide high school students with an introduction to the aquatic plants that they can see without a microscope. Students will learn about the relationships between plants, fish and people. A glossary explains unfamiliar terms. Appendixes show how to make and use a plant press for pressing aquatic specimens, and record sample collection notes in the field.

Clean Water Shopping Guide. Grades 8-12. T. Schneider. 1992. Wallet-sized card. Free.
This wallet-sized card lists clean water product alternatives to common household chemicals.

Coastal Educators Newsletter. Grade 12. H. D. Greene, ed. Bimonthly newsletter. 4 pp. Free.
Intended for all teachers dealing with coastal topics, this newsletter is published bimonthly during the school year. Focus is on lesson ideas, programs and corresponding dates relating to coastal education.

Coastlines Newsletter. Grades 8-12. New York Sea Grant Communications. Quarterly newsletter. Free.
A newsletter designed to inform the general public of the research activities of New York Sea Grant Institute and the education and extension activities of the seven Sea Grant Extension offices. Topics include both marine and Great Lakes sport and commercial fisheries, coastal use and development, and marine education.

Educational Materials Catalog. Grades 8-12. D. Puglisi. 1993. 35 pp. Free. ($1.00 S/H).
This catalog describes a number of New York Sea Grant's print publications and audiovisual materials pertaining to aquaculture; commercial fisheries; coastal recreation and tourism; coastal resources; fish consumption and technology. It also provides resources for general information on marine and youth education.

Family Boating: Preparing for an Emergency. Grades 8-12. H. D. Greene. 1993. 8-panel brochure. Free.
Preparation is crucial to safety on the water. This brochure discusses boat handling, trip planning, the use of signals, the dangers of cold water, and what to do if an accident occurs. A list of safety equipment is included.

Great Lakes Research Review. Grades 8-12. Helen Domske, Editor. Semiannual. 42 pp.
Jointly published by New York Sea Grant, the Great Lakes Program, and the Great Lakes Research Consortium, the review is designed to provide an in-depth look at a particular topic or area of Great Lakes research being conducted around the basin. This substantive publication is topic driven, and past issues have focused on toxics, fishes and exotic species.

Guidelines to Increase Survival of Released Sport Fish. Grades 7-12. Mark Malchoff and David B. MacNeill 1995. 6 pp. $1.
Guides the angler through the management rationale behind release of sport-caught fish. Discusses the causes of angling mortality in fish, and presents both general recommendations on releasing fish and more specific suggestions for increasing survival of marine offshore and bottom fish species, warm water freshwater species, and trout and salmon taken at greater depths.

Help Save Our Waters: A Storm Drain Project. Grades 7-12. M. Beristain. 1991. Illustrated Brochure. Free.
Anything that goes into a storm drain goes into the bays, rivers, ocean, LI Sound, or groundwater. Storm drains directly link your neighborhood to our coastal and groundwaters. This brochure

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HAZARDOUS
PRODUCTS
AHEAD
DUST
Window
Spic 'n Clean
LEAN WATE
SHOPPING

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describes a project you can participate in to help save our waters. By painting the message "Don't Dump" on roadways, next to storm drains, you can help spread the word that nothing but rainwater should enter storm drains.

Marine-Related Occupations: A Primer for High School Students. Grades 8-12. New York Sea Grant. Revised 1993. 16 pp. Free.
The aims and objectives of this memorandum is to assist high school students to better understand the broad scope of job opportunities in marine-related occupations by indexing examples of job descriptions from scientific, professional, and technical fields. It gives college-oriented high school students assistance in choosing high school and college courses that will prepare them for some of the jobs described in this memorandum. (Reprinted from Marine Memorandum Number 41 edited by Prentic K. Stout and Sara S. Callaghan, Marine Advisory Service, University of RI, 1976.)

Marine Science Careers: A Sea Grant Guide to Ocean Opportunities. Grades 8-12. ***Maine/New Hampshire Sea Grant College Program and the Woods Hole Oceanographic Institution Sea Grant Program. 1996. 40 pp. $5.00.
While students considering careers in the marine sciences often picture themselves at sea, working with marine mammals, marine science offers many other interesting opportunities. This career guide will introduce students to a wide range of related fields. It contains question and answer profiles of 38 marine scientists and other professionals from around the country. This guide book is intended for high school students, but it will also be of interest to college undergraduates, middle school students, parents, teachers and guidance counselors. It also includes a list of additional organizational and published resources.

Marine Science at Work - Case Studies and Youth Action Plans. Grades 6-12. R. Kent and H. D. Greene. 1994. 24 pp. $6.00.
This three-part practical teaching outline focuses on environmental science in the areas of food fish contaminants, marine fish populations, and the relationship between surface runoff and coastal water quality. It is designed for youth educators, and discusses water quality issues, seafood safety, and fisheries management.

Nor'easter: Magazine of the Northeast Sea Grant Programs. Grades 8-12. University of R.I. Bay Campus Publications Office. Biannual. 32 pp. Free. ($1.00 S/H).
This combined magazine of the Rhode Island, Connecticut, MIT, New York, Woods Hole, and Maine/New Hampshire Sea Grant Programs focuses on marine issues through a variety of feature stories and short research and advisory briefs. It also contains a listing of current marine publications.

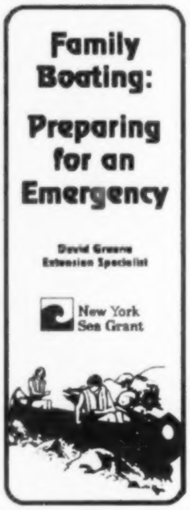
Our Lake Ontario Sand Dunes: A Resource Notebook. Grades 8-12. D. White. 1993. $10.00.
This notebook provides a basic overview of the natural resources of the area (i.e. flora and fauna), and provides tips for using these resources for both recreation and education. It is a reference for our use of, and impacts on the dune system.

Perspectives Newsletter. Grades 8-12. Great Lakes Program, University at Buffalo. Quarterly newsletter. 16 pp. Free.
This combined newsletter from the Great Lakes Program, New York Sea Grant and the Great Lakes Consortium, features articles and information related to research, education and outreach activities around the Great Lakes. It also contains a section titled Research Highlight, which focuses on the research being conducted at various laboratories around the basin.

Public Information Inventory for Lake Ontario. Grades 8-12. J. Pultz. 1993. 42 pp. $2.00.
An inventory of available educational information pertaining to Lake Ontario environmental topics. Includes lists of brochures, books, audiovisuals, newsletters, instructional materials and periodicals, and appendices of inventory contacts and other resources.

***Not a New York Sea Grant publication, but available from NYSG upon request.

Ordering Instructions:
New York Sea Grant Institute
121 Discovery Hall
SUNY at Stony Brook
Stony Brook, NY 11794-5001
(516) 632-6905
NYSeaGrant@ccmail.sunysb.edu


Family Boating:
Preparing for an Emergency
David Greene
Extension Specialist
New York Sea Grant

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North Carolina Sea Grant College Program

North Carolina State University
Box 8605
Raleigh, NC 27695-8605
(919) 515-2454

Coastal Capers: A Marine Education Primer. Grades K-5. **UNC-SG-84-05.** 80 pp., illustrated. $3.50.
An activity book that primary grade teachers can use to introduce and explain the marine environment. The activities sharpen students' skills in science, math, language arts, social studies and art.

Ripples: A Big Sweep Elementary Activity Guide. Grades 3-6. **UNC-SG-90-02.** 40 pp. $3.00. postage/handling fee.
Designed for the 9- to 11-year-old child, this manual teaches children about litter in our waterways and the problems it causes for wildlife and the environment. Addresses wildlife entanglement and recycling. Contains 156 illustrated activities, including active games, puzzles and projects. To order write to: North Carolina Big Sweep, P.O. Box 908, Raleigh, NC 27602-0908 or Call (919) 828-6686.

Splish Splash: A Big Sweep Aquatic Primer. Grades K-2. **UNC-SG-92-07.** 44 pp., illustrated. $3.00 postage/handling fee.
Designed to teach K-2 children about the hazards of litter in aquatic and marine environments. This teacher's manual includes activities on recycling, animal entanglement, plastics and other throwaways and keeping our waterways clean. To order write to: North Carolina Big Sweep, P.O. Box 908, Raleigh, NC 27602-0908 or Call (919) 828-6686.

North Carolina Coastal Plain: A Geological and Environmental Perspective Video Series. Grade 8. **UNC-SG-89-02.** $30.00.
Correlates with the eighth grade science objectives to integrate geological, ecological and environmental science concepts. The program also complements eighth grade social studies curriculum. The materials in this program are also appropriate for informal educational settings. The video, approximately 105 minutes, is divided into eight presentations ranging from 8 1/2 minutes to 17 minutes. The activity guide offers hands-on activities to enhance the students' grasp of major concepts. A script with supplementary background is included. Purchasers may copy all materials as needed.

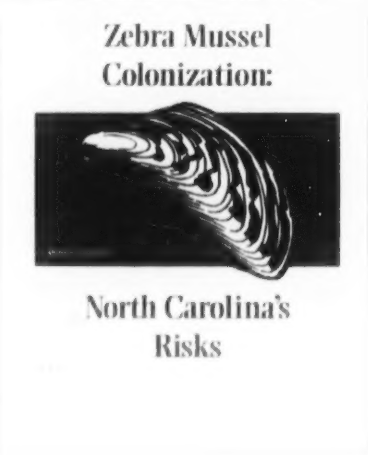
North Carolina Marine Education Manuals. Grades 6-8.
Manuals to assist educators, particularly middle school science and social studies teachers, in presenting the coast as a setting and subject for study. Each manual has a similar format. Activities and laboratory exercises provide students with hands-on experience. Additional resources, films and references are listed.
Unit One, Coastal Geology. UNC-SG-78-14A. 108 pp., illustrated. $3.50
Unit Four, Coastal Beginnings. UNC-SG-78-14D. 175 pp., illustrated. $2.00.

Undersea Oases: The Science of Hardbottoms. Grades 7-Adult. **UNC-SG-93-05.** VHS cassette. 45 minutes, 14 seconds. $19.95.
This video, for ages 12 and up, plunges viewers to the continental shelf between North Carolina and Florida for a view of the perplexing rocky outcrops called hardbottoms. Surrounded by sandy flats, the crumbling ledges of these rocky cliffs are topped by algal meadows that attract an array of marine life. Through footage taken from submersibles and by scuba divers, Sea Grant scientists guide viewers through the hardbottom ecosystem and outline their ongoing research. To order write to: Environmental Media, P.O. Box 99, Beaufort, SC 29901, or call (800) 368-3382, or fax (803) 986-9093.

Coastwatch: North Carolina's First Inhabitants. Grades 4-8. **UNC-SG-92-13.** Illustrated. $2.50.
Includes information about the earliest history of North Carolina's first coastal inhabitants, about archaeologists unearthing clues of Native American history, about key excavation sites of prehistoric settlements and about one group of Indians' present-day struggle to reclaim its past.

Seashells Common to North Carolina. Grades 6-Adult. **UNC-SG-97-03.** $10.
An illustrated guide to the state's seashells.

Seacoast Plants of the Carolinas for Conservation and Beautification. Grades 6-Adult. **UNC-SG-73-06.** 206 pp. $4.50.
A handbook on the use of



Zebra Mussel
Colonization:

North Carolina's
Risks

plants for landscaping and stabilizing coastal soils.

A Guide to Salt Marsh Plants Common to North Carolina. Grades 6-Adult. **UNC-SG-81-04**. 32 pp., illustrated. $3.50.
A teaching guide to the herbs, vines, grasses, shrubs, and trees found in North Carolina marshes.

A Guide to Ocean Dune Plants Common to North Carolina. Grades 6-Adult. **UNC-SG-SG-87-01**. 80 pp. $4.50.
Describes and illustrates the herbs, vines, grasses, shrubs and trees found on or near the North Carolina dunes.

The Death of Whale. UNC-SG-93-07. Grades 5-Adult. VHS cassette. 17 minutes. $19.95.
Tells about the stranding and death of a juvenile female sperm whale on Wrightsville Beach, NC, December 1992. This is a documentary of actual footage of the stranding and subsequent necropsy, which reveals the stomach full of plastic debris – the probable direct or indirect cause of death. Produced by Marine Grafics in conjunction with Sea Grant. To order write to: Environmental Media, P.O. Box 99, Beaufort, SC 29901, or call (800) ENV-EDUC, or fax (803) 986-9093.

Marine Science Careers: A Guide to Ocean Opportunities. Grades 6-Adult. 40 pp, illustrated. $5.00.
Provides a comprehensive look at a wide range of marine professions. Includes interviews with professionals in these fields. It's perfect for students who see ocean in their future. (Published by the University of New Hampshire).

North Carolina Coastal Water Quality: Questions and Answers. Grades 8-Adult. **UNC-SG-97-04**. 35 pp. $6.00.
A guide for understanding some of the issues and concepts related to groundwater, coastal rivers and estuaries. Presented in an accessible question-and-answer format. Includes a glossary of water quality terms.

Zebra Mussels: A Costly Threat to North Carolina. **UNC-SG-92-11**. Grades 4-Adult. Brochure. 4 pp. Free.
Describes the exotic zebra mussel and suggests how boaters and fishermen can avoid spreading the pests in North Carolina waterways.

Mid-Atlantic Zebra Mussel Fact Sheet. Grades 4-Adult. **UNC-SG-93-01.** 6 pp. Free.
Examines the possibility for a zebra mussel colonization of the mid-Atlantic region, which includes North Carolina discusses the possible routes of entry the mollusk might take and examines the characteristics of the mid-Atlantic environment that would make it a hospitable host for the prolific mussel.

"Zebra Mussel Watch" Wallet Identification Cards. Grades 4-Adult. Free.
Explains how to identify zebra mussels and recommends what steps should be taken if you suspect you have found a zebra mussel. Full-color wallet-sized folded cards (designed by the University of Wisconsin Sea Grant Institute).

Zebra Mussel: Stop the Invasion Poster and "Zebra Mussel Watch" Wallet Cards. Grades 8-Adult. **UNC-SG-95-04.** Free.
An 11-by-17-inch UV-coated poster with a four-color process photo of a zebra mussel. Clearly shows the zebra mussel and its identifying markings. It also includes a checklist of four steps boaters can take to keep from spreading these freshwater mussels and other exotic species from one body of water to another. Each poster comes with an attachable matching pocket designed to hold up to 50 of the "Zebra Mussel Watch" wallet I.D. cards.

Zebra Mussels and Aquaculture: What You Should Know. Fact Sheet. Grades 8-Adult. **UNC-SG-95-01.** 4 pp. Free.
Provides information on protecting aquaculture operations from zebra mussels, the small, clamlike freshwater mollusks native to Eastern Europe and Central Asia. Zebra mussels can clog cages or net pens, reducing food availability for fish or interfering with seining. This fact sheet details the mussel's environment requirements, lists tips for prevention and outlines methods of control and monitoring.

Organizing a Zebra Mussel Task Force. Grades 8-Adult. **UNC-SG-96-01.** Fact sheet. 4 pp. Free.
Addresses the purpose and need of state and regional task forces and how they can be used to effectively guide a zebra mussel outreach program. It outlines how to recruit, organize and operate such a program.

Risk Assessment of the Potential for the Zebra Mussel Colonization of North Carolina's Waters. Grades 8-Adult. **UNC-SG-97-01.** Folded 18-by-24 inch poster-map. Free.
Examines the potential for

A GUIDE TO
OCEAN
EDITED BY
DUNE PLANTS
COMMON TO NORTH CAROLINA
BY E. JEAN WILSON KRAUS

zebra mussel colonization to North Carolina by comparing the environmental tolerance limits of zebra mussels to the chemical characteristics of our waters. Specifically, the parameters evaluated include calcium, salinity, pH, temperature and dissolved oxygen. Provides instructions on how to confront the zebra mussel issue proactively.

Coastwatch. Grades 6-Adult. $15.00/a year.
North Carolina Sea Grant magazine published six times a year. Provides in-depth information about the issues, problems, personalities and places that make the North Carolina coast unique. It also includes regular departments for nature, research, seafood, books, fishing, letters, commentary, publication lists, updates and events.

Conch Shell. For Adults. Free.
A newsletter for educators that provides new ideas about marine education and an update of events. Published triannually.

Legal Tides. For Adults. Free.
A newsletter for lawyers, planners and government officials that addresses timely legal issues related to coastal and environmental law. Published biannually.

Waterwise. For Adults. Free.
A newsletter that looks in depth at timely water quality issues, giving them perspective and describing related research. Published quarterly.

Ordering Instructions:
Make check or money order payable to North Carolina Sea Grant. Sorry, we do not take credit cards. Send requests to:

North Carolina Sea Grant College Program
North Carolina State University
Box 8605
Raleigh, NC 27695-8605.

Ohio Sea Grant College Program

Ohio State University
1314 Kinnear Road
Colombus, OH 43212-1194
(614) 292-8949

Global Change Scenarios for the Great Lakes Region. For Teachers. **EP-078, EP-080.** 2-4 pp. each. $9.00.
Scenarios on global change in the Great Lakes explore water resources, biological diversity, shipping, agriculture, airborne circulation of toxins, estuaries, eutrophication, recreation, fisheries and forests. The 10 scenarios include an introduction explaining climate models are packaged in a file folder.

Great Lakes Instructional Material for the Changing Earth System. General Interest. **EP-078, EP-080.** $9.00.
Accompanies EP-078 (above) To provide integrative activities on global change to educators and decision-makers. EP-078 and EP-080 must be purchased together.
Summary of the Global Change Scenarios for the Great Lakes Region. (Above) PS-057. Free.

Holling C. Holling's Paddle-to-the-Sea. Grades 3-6. Published by Houghton Mifflin Company. **EP-076/B.** 28 pp. $10.00.

Supplemental Curriculum Activities to Accompany Holling C. Holling's Paddle-to-the-Sea. Grades 3-6, science and social studies. **EP-076.** 168 pp. $10.00.

Marine-Related Careers. Grades 6-16. **PS-012.** Free.
Provides a list of resource publications and practical advice for marine-minded students.

Abstracts of Research in Marine and Aquatic Education: 1975-1990. For Graduate Students. **EP-077.** 24 pp. $2.00.
Brief review of the topics addressed in marine and aquatic education research, including knowledge and attitude testing of various groups, models of program evaluation and comparisons of impact of education techniques.

Earth Systems - Education Activities for Great Lakes Schools. Grades 6-12. $8.00 each.
Designed to take a concept or idea from the existing school curriculum and develop it in a Great Lakes context, using teaching approaches and materials appropriate for

students in middle and high school. The activities are characterized by subject matter compatibility with existing curriculum topics, short activities lasting from one to three classes, minimal preparation time, minimal equipment needs, standard page size for easy duplication, suggested extension activities for further information or creative expression, teachability demonstrated by use in classrooms and content accuracy assured by critical reviewers.

- Land & Water Interactions in the Great Lakes. **EP-082.**
- Great Lakes Climate & Water Movement. **EP-083.**
- Great Lakes Shipping. **EP-084.**
- Life in the Great Lakes. **EP-085.**
- Great Lakes Environmental Issues. **EP-086.**

The Great Lakes Solution Seeker. Grades 7-12. **EP-081.** Compact Disk. $10.00.
This compact disk will help educators teach their students about the Great Lakes by providing on-line or simulated Internet connections to comprehensive data sources, resources, graphics and activities. The data and activities work best on Macintosh system 7.0 or higher. Most sections are also usable with Windows 95.

OEAGLets. Grades 1-3. $5.00 each.
Three activities provide students in primary grades with activities relevant to Lake Erie. The activities apply to all primary subject areas.

- Lake Erie - Take a Bow. **EP-031.**
- Build a Fish to Scale. **EP-032.**
- A Day in the Life of a Fish. **EP-033.**

Ordering Instructions: Make checks payable to The Ohio State University and mail with request to: Ohio Sea Grant Publications
The Ohio State University
1314 Kinnear Rd.
Colombus, OH 43212-1194

Oregon State University

Sea Grant College Program
Administrative Services A500G
Corvallis, OR 97331
(530) 737-2714

Coastal Zones of the Pacific: A Descriptive Atlas. Grades 7-12. **ORESU-B-96-001. 1996.** 160 pp. $14.95 plus postage. ($2.00 first book, 50¢ for each additional book) Discounts available to libraries, educational institutions, and retailers, write for price quote. Developed for young people from 13 to 17, Coastal Zones of the Pacific presents the environmental and human dimensions of life along the Pacific Rim. The atlas contains 34 photographs and 68 illustrations, many of them maps of the Pacific, giving information on topics such as cars per 1,000 people, protected areas of the Pacific, threatened birds, distribution of original peoples, square kilometers of mangrove, and nuclear activity in the Pacific.

The following eight items should be ordered from:
Sea Grant Education Program, Hatfield Marine Science Center, 2030 S. Marine Science Drive
Newport, OR 97365
(541) 867-0159
(For those items that require postage, add $3.00 for the first item and $1.50 for each additional item).

The Columbia River: Its Future and You. Teacher's Manual for Grades 5-8. Frost. **EM8474. 1992** rev. 90 pp. $3.00 plus postage.

The Columbia River: Its Future and You. Teacher's Manual for Grades 9-12. G. Conrath. **EM 8475.**1992. rev. 80 pp. $3.00 plus postage.
This guide, and the one above, study the Columbia River from a multidisplinary approach. Combining social studies and sciences, they contain units on history of the Columbia and on the river's use for energy, fisheries, agriculture, recreation and navigation.

A Whale's Tale. Grades 7-12. M. Goodrich. 1993. $10.00 plus postage.

Marine Debris Display Kit. Grades K-12. Photographs and display materials for presenting an exhibit on the plastic disposal issue and the effect of debris on fish and wildlife. Includes video and booklet. $20.00 plus postage. Two-week rental only.

Population Display Kit. Grades 7-12.
Bulletin board display and video. $20.00 plus postage. Four-week rental only.

Sharks of Oregon Poster. Grades K-12. $2.00.
Black-and-white poster illustrating 13 sharks that inhabit the Oregon coast.

Oregon's Continental Margin. Grades 7-12.
Full-color bathymetric map of Oregon's continental shelf and slope. $3.00.

The following five publications must be ordered from: The South Slough Research Reserve
P.O. Box 5417
Chaleston, OR 97420
(541) 888-5558

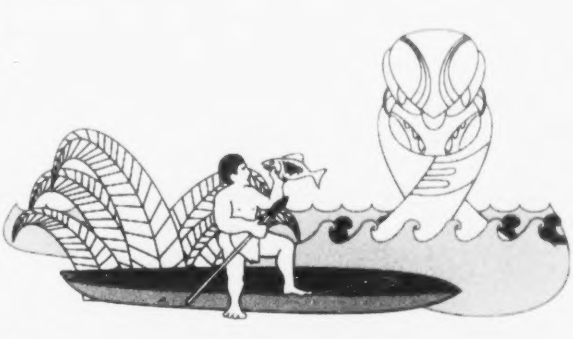
Make checks payable to: friends of South Slough. Postage rates for the South Slough material are as follows:

Order Amount	Charge
$1.00-4.99	$3.00
$5.00-9.99	$4.00
$10.00-14.99	$5.00
$15.00-19.99	$6.00
$20.00+	$7.00

The Lore of South Slough. Level III - Grades 7-8. 1981. 76 pp. $4.00.
In the morning, students join five different old-timers of the South Slough to investigate the Slough's rich cultural and natural history. The old-timers share stories of the obvious riches they were so dependent on in the South Slough, such as: timber, farmland, minerals water transport, and native plants and animals. In addition, surprise visits are made by two characters that stress the hidden riches of the natural workings of the estuary: Dr. Mudflat and the Estuary Soup Chef. After an old-time lunch over an open fire, the science students may conduct scientific investigations in the different zones of the estuary. On the other hand, social studies students may make mini-investigations of the evidence still remaining of the early activities of the South Slough.

In Search of the Treasures of South Slough. Level I-Grades 4-5. Teacher's Manual. J. Garner and K. Garland. 1982. 67 pp. $4.00.
Students are sent on a treasure hunt to discover the "treasures of South Slough." They encounter four different activities, each involving a different "zone" or part of the estuary: uplands, salt marshes, mudflats, and open water. Each zone's activity helps the students get a little closer to figuring out the treasure: that this part of the estuary has been set aside as a sanctuary, a protected place for the animals and plants, with very little disturbance from people.

The Secret of the Medallion. Level II - Grade 6. Teacher's Manual. J. Garner and K. Gartland. 1982. 67 pp. $4.00.
Students are sent on an expedition to figure out the meaning of a special medallion that was uncovered in the South Slough area. To do this, students must "unlock" the "truths" about estuaries through scientific investigations. At seven different "outpost stations" they figure out the Big Secret of the estuary: "that the sun and moon combine forces to support one of the richest places on earth."



Estuary: An Ecosystem and a Resource. A Reading Guide for Grades 9-12. 1984. 56 pp. $4.00.

Estuary: An Ecosystem and a Resource. Teacher's Manual. 1984. 304 pp. $4.00.
The reading guide contains a glossary and chapters on the place of estuaries in the water cycle, physical factors in estuaries, estuarine habitats, and uses of estuaries. The teacher's manual suggests laboratory and field activities to reinforce the lessons in the reader.

University of Puerto Rico

Sea Grant College Program
UPR-RUM, P.O. Box 9011
Mayagüez, PR 00681-9011
(787) 834-4726
FAX: (787) 265-2880

Fishes of Puerto Rico. Grades 9-12. General Interest (Bilingual) Vangie F. Hernández. **UPRSG-E-43.** $3.00.
This 40-page, black-and-white guide to the common fish species of Puerto Rico includes Spanish, English and taxonomic names plus information on average size and edibility. Useful to students, libraries, restaurant owners and the general public.

The Manatee: Questions and Answers. (Spanish only) Grades K-12. UPR Sea Grant and Caribbean Stranding Network. **UPRSG-E-53.** Free. SASE with 32¢ stamp.
This free full-color, illustrated pamphlet introduces the reader to several aspects of the manatee's life cycle and its need for protection. Presented in a question-and-answer format, it addresses queries like: What is a manatee? Where are manatees found? Why is the manatee in danger of extinction? and How can community members help?

On the Verge: Limericks on the Life and Times of Queen Conch. (English) General Interest/Grades K-12. Dr. Richard Appeldoorn. **UPRSG-E-36.** $1.25.
This witty book describes the life history, ecology and lore of the queen conch through limericks. Scientific facts and hypotheses are whimsically presented and illustrated. Educational and fun, this book will appeal to anyone interested in marine biology.

Video: The Unseen Tragedy. Grades K-12/General Interest. (English and Spanish versions available. Send a blank tape.)
This 30-minute video illustrates the unseen, submarine effects of Hurricane Hugo on seagrass beds and coral reefs.

Facts Sheets: Seven Coast Notes. Grades 9-12/General Interest. (English) and 25 Datos Marinos. (Spanish) Free. SASE with 64¢ stamp.
Address marine-related theme ranging from seafood nutrition and safety issues to coral reef protection and ways to effectively protect the environment.

A Field Guide to the Thalassia Fields of Puerto Rico. Grades 9-12/General Interest. (Spanish only) C. Garcia. **UPRSG-E2-48.** $1.00.
This is the first in a series of illustrated field guides on marine ecosystems of Puerto Rico. Focusing on underwater fields of marine plants, this guide describes the system's productivity, flora, fauna, and the trophic relationships among its inhabitants. Includes a glossary and field identification key.

Chitons of Puerto Rico: A Field Guide. (Spanish only) C. Garcia. Grades 9-12/ University Students. **UPRSG-E1-33.** $1.25.
This educational field guide offers simple taxonomic keys for field identification and classification of chitons (Mollusca: Polyplacophora) of Puerto Rico.

Finding Marine-Related Information in School and Public Libraries. (Spanish only) Grades K-12. Alida Ortiz. **PRU-E-1.** Free - SASE with 32¢ stamp.
This free pamphlet assists students and teachers in using libraries as a source of marine-related information. Includes a list of marine-related periodicals, a compendium of basic scientific names and plant and animal classifications, and points out educational institutions with good library resources concerning the sea.

Voices of the Sea. (Spanish only) Grades K-12. Loreina Santos-Silva. **PRU-E-15.** $2.50.
This 70-page book of poetry is based on conversations with Puerto Rico fishermen. Many legends and local sea stories are preserved in these poems, illustrated with pen and ink drawings by Alicea.

Marine Vegetation and Its Uses. (Spanish only) Grades K-12/General Interest. **UPRSG-E-52.** $3.00.
This volume, an illustrated guide to marine vegetation and their uses, includes sections on different types of marine vegetation, how they serve as food fertilizer, animal fodder, a source of energy production, components of pharmaceutical products and much more.

Guide to Edible Fish and Seafood for Puerto Rico. Grades 9-12/General Interest. Maria Beatriz and Evelyn Cepeda. (Spanish only) **UPRSE-G-68.** 1996. $3.00.
This is a guide containing information on fish and seafood, with black and white illustrations, scientific names for each organism, nutrition and preparation information. Will aid students as well as fishermen. Includes fishing gear illustrations.

Un Mar de Creaciones. Grades 9-12/General Interest. (Spanish only) $3.00.
This practical guide to ocean crafts offers clear, step-by-step instructions for creating sand paintings and mosaics, mobile shell sculptures, jewelry, greeting cards, sun prints, decorated picture frames and much more, including hints on starting and maintaining a sea shell collection.

Las Tortugas Marinas. Grades K-12/General Interest. (Spanish only) Free - SASE with 32¢ stamp.

This full-color pamphlet introduces the reader to several aspects of the sea turtle's life cycle and its need for protection. Presented as questions and answers, it addresses queries including "What are sea turtles?" "Which species exist in Puerto Rico?" "Why are they in danger of extinction?" and "How can communities help?"

Coast and Beach Stability. Grades 9-12/General Interest. (English) Free - SASE with 32¢ stamp.

Considering the importance of beaches on tropical islands, beach erosion poses major problems. This brochure describes the work of COSALC- 1, sponsored by UNESCO and UPR Sea Grant. Can be used as an organizing tool for networking and action throughout the English-speaking Caribbean.

El Manatí. Grades K-12. (Spanish only) Free - SASE with 32¢ stamp.

This pamphlet, illustrated with beautiful, full-color photos, answers an array of questions about this marine mammal's life cycle and related conservation efforts.

Ahogamiento en el Mar. Grades 9-12. (Spanish only) Free - SASE with 32¢ stamp.

This is a Spanish language adaptation of Hawaii's Drowning: Causes and Prevention. Includes information on the physiology of drowning and advice on how to prevent it, first aid for drowning victims plus an island-wide guide to emergency medical training and services.

Coast Notes. Laurie Fletcher-Hall. (English only) Grades 9-12. Free - SASE with 64¢ postage for all six.

This six-part series presents fact sheets on careers related to the marine world. Each fact sheet answers the question "What do professionals in this field do?", outlines an educational plan for success and describes diverse occupations within each career field. Coast Notes were designed especially for high school students, but are also suitable for use at junior high and early college levels.

- Careers in Marine Biology - **FS-30.**
- Careers in Physical and Chemical Oceanography - **FS-31.**
- Careers in Ocean Engineering - **FS-32.**
- Marine Careers in Medicine & Health - **FS-33.**
- Marine Careers in Resource Management, Planning, Policy Making and Law - **FS-34.**

Manatees: Give Us A Chance to Live. Grades 9-12/General Interest. (Spanish & English versions - please specify) $4.00.

The UPR Sea Grant Program has joined with the U.S. Fish and Wildlife Service to produce a poster designed to alert and educate the general public about threats to the manatee population in the Caribbean. This full-color 24-by-34 inch poster shows how boaters, jet skiers and construction projects contribute to manatee injuries and mortality, while offering guidelines for helping conserve populations of this gentle, vegetarian marine animal.

Mangrove Ecosystem Poster. Grades K-12/General Interest. $4.00. (Free to schools and libraries with a request written on official stationary).

This full-color, 25-by-36 inch poster celebrating the diversity of life within mangroves was produced by UPR in collaboration with the Program for Aquatic Resources Education of Puerto Rico's Department of Natural and Environmental Resources. An easy-to-use graphic key identifies 53 plants and animals with their scientific names.

Thalassia-Beds Ecosystem Poster. General Interest. $4.00. (Free to schools and libraries with a request written on official stationery.) This full-color, 25-by-36 inch poster depicting life within a Thalassia bed, was produced by U.P.R. Sea Grant in collaboration with the P.R. Department of Natural and Environmental Resources and the Recreational Fisheries Restoration Program. An easy-to-use graphic key identifies 73 organisms that live in or depend on this important habitat. Also includes scientific names.

Ordering Instructions:

Shipping and handling costs:
Posters: Includes mailing tube and postage: $4.00.
Pamphlets: SASE with two $0.32 stamps.
Book (each): $1.00

To order, send check or money order payable to:
Programa de Colegio Sea Grant
Universidad de Puerto Rico
Communicaciones.
UPR-RUM - P.O. Box 9011
Mayaguez, PR 00681-9011

Rhode Island Sea Grant

University of Rhode Island Bay Campus
Narragansett, RI 02882-1197
(401) 792-6842

A Guide to Rhode Island's Natural Places. Educators/General Interest. Elizabeth Gibbs, Tony Corey, Malia Schwartz, Deborah Grossman-Garber, Carole Jaworski, and Margaret Bucheit. **P1372.** 216 pp. $15.00.
This beautiful, 216-page guide is a must for naturalists, historians, teachers, and anyone wanting to discover Rhode Island. The book offers descriptions to over 180 sites throughout the state, gives suggestions about what to look for at the site, and gives accurate directions to each site. Also included are many information boxes that describe unique or interesting habitats, animals, and plants to be found in your travels. The guide comes with an accompanying map with all the sites and primary and most secondary roads depicted.

Marine Science Careers: A Sea Grant Guide to Ocean Opportunities. Grades 9-12. Steve Adams and Tracey Crago. 40 pp. $5.00.
Intended for high school students, this national Sea Grant publication provides a comprehensive view of the possibilities and probabilities of marine science careers today and in the future. The guide includes information on marine biology, oceanography, ocean engineering, and related fields, as well as career outlooks and additional resources. Question-and-answer profiles of 38 marine scientists and other professionals from around the country are also featured.

Planning an Aquaculture Business in Rhode Island: Getting Started. General Interest. Michael A. Rice and Arthur R. Ganz. **P1389.** 40 pp. $7.00.
Starting an aquaculture business can be a daunting experience. This manual takes an aspiring aquaculturist through the entire process, from obtaining the proper permits to submitting a business plan, and offers resources for additional information.

The Northern Quahog: The Biology of *Mercenaria mercenaria*. Grades 9-12/Educators/General Interest. Michael A. Rice. **P1276.** 68 pp. $5.00.
Learn about the northern quahog—Rhode Island's official state mollusk—in this comprehensive book that offers detailed information on the hard clam's biology and ecology, fishery, and methods of aquaculture.

Metal Inputs to Narragansett Bay: A History and Assessment of Recent Conditions. General Interest. Scott W. Nixon. **P1388.** 76 pp. $10.00.
For centuries, human input of metals into Narragansett Bay has been a source of pollution to varying degrees. This two-part book traces the rise in metals input from iron-making enterprises in the mid-1600s through the activities of the Industrial Revolution to the urban sewage and manufacturing discharge in the first half of the 20th century. Part two inventories more recent metals inputs and their sources.

Environmental Guide for Marinas: Controlling Nonpoint Source and Storm Water Pollution in Rhode Island, Revised 1996. General Interest. Mark Amaral, Virginia Lee, and Jared Rhodes. **P1374.** 155 pp. $10.00. Now available on-line.
Recreational boating facilities can generate pollution through routine activities, such as hull maintenance, fuel spillage, and sewage disposal. Nonpoint source pollutants are targeted in federal and state water quality regulations. This document offers practical guidance to marina operators for reducing nonpoint source pollution by presenting best management practices designed and tested at model marinas.

Vegetated Buffers in the Coastal Zone: A Summary Review and Bibliography. General Interest. Alan Desbonnet, Pamela Pogue, Virginia Lee, and Nicholas Wolff. 71 pp. **P1333.** $7.00.
Vegetated buffers often consist of no more than a strip of grassy, shrubby, or treed land, but their role in the coastal zone is quite important. This publication explores the use of vegetated buffers for flood and erosion control, wildlife habitat protection, and scenic enhancement, as well as pollutant removal.

Proceedings of the East Coast Bycatch Conference April 7-8, 1995. General Interest. Newport, Rhode Island. Kathleen Castro, Tony Corey, Joseph DeAlteris, and Chris Gagnon, eds. **P1450.** 160 pp. $10.00.
Fishermen, scientists, regulators, and environmentalists discuss the impact of bycatch on fisheries, successes and failures of specific bycatch reduction efforts from management strategies to gear modifications, and cooperation in bringing about a solution to the bycatch problem.

Best Management Practices for Clean Marinas: Lessons Learned. General Interest. Jared Rhodes, Jason Marino, Mark Amaral, and Virginia Lee. P1459. 20 pp. $4.00.
This report presents the results of six years of experimental work to control nonpoint source pollution and help marina operators comply with federal and state regulations. Nine case studies describe the best management practices (BMPs) that were tested, looking at costs, pollutants collected, and overall effectiveness.

Hazard Mitigation for Recreational Harbor Communities. General Interest. P1436. 49 pp. $5.00.
Much of the storm damage in harbors results from a lack of planning and preparedness. This document, prepared in cooperation with the R.I. Emergency Management Agency, offers model plans and fact sheets for municipalities, marinas, and boaters.

Boater Fact Sheets. Grades 6-12/Educators/General Interest. 50 cents each or $2.00 for set of six.
This series of one-page fact sheets is designed to help boaters reduce pollution associated with everyday activities on the water and at the dock. Each fact sheet presents tips and clear steps for boaters to follow.

- Sanding and Painting. **P1421.**
- Vessel Cleaning and Fish Wastes. **P1439.**
- Engine Maintenance. **P1440.**
- Vessel Sewage. **P1441.**
- Bilge's, Fueling, and Spill Response. **P1442.**
- Solid Waste Disposal. **P1443.**

New Fact Sheets. Grades 6-12/Educators/General Interest. Rhode Island Freshwater Clams and Mussels. **P1390.** Aquaculture. **P1415.**

*For marine publications on-line, visit Rhode Island Sea Grant's web sit at: http://www/riseagrant

Narragansett Bay Poster. Grades K-12/Educators/General Interest. **P1068.** $2.50.
This brilliantly colored 18-by-24 inch poster, showing the contour of the floor of Narragansett Bay, was produced by 3-D computer modeling.

Fish of Narragansett Bay Poster and Brochure. Grades K-12/Educators/General Interest. LaVie McDonald. Poster. **P1144.** $5.00. Brochure. **P1145.** 8 pp. One copy included free with poster. Additional copies $1.00 each.
Lushly printed in six colors, this dramatic large-format (39-by-16.25 inch) poster illustrates 16 fish species commonly found in Narragansett Bay. The fish are accurately rendered in bright colors and swim against a vivid blue and green background. Accompanying the poster is a brochure that details the fish size, physical characteristics, where found, how caught, prey and additional remarks. The brochure is printed on recycled paper.

The Changing Role of Today's Harbormaster. General Interest. Mark Amaral. **P1142.** 12 pp. $3.00.
This booklet, based on a survey of all New England harbormasters, assesses the issues facing today's harbormasters. It includes information on the changing background of the harbormasters, organization of the harbormaster office, developing trends in law enforcement and mooring regulations, current training and training that will be necessary in the future.

Air-Sea Rescue Procedures Videotape. General Interest. The University of Rhode Island and U.S. Coast Guard. **P1141.** 20-minute videotape. $15.00.
A U.S. Coast Guard air-sea rescue is a tricky maneuver at best. Unfortunately, in many cases the people being rescued compound the difficulty and danger because they do not understand rescue procedures. In this educational video, Coast Guard personnel demonstrate several rescue techniques and give step-by-step instructions for those being rescued. The potentially lifesaving information is vitally important for anyone who uses a boat. Procedures covered in this video are: delivery of equipment (such as pumps or medical supplies) or personnel from a helicopter to a vessel; evacuation of people from the water or rafts to a helicopter; and medical evacuation of a sick or injured person from a boat to a helicopter.

Fact Sheets. Grades 6-12/Educators/General Interest. One-page fliers (order by number). 50 cents or five for $2.00.

- Haddock. **P185**
- Flounder. **P186.**
- Scallop. **P187.**
- Atlantic Cod. **P188.**
- Atlantic Mackerel. **P189.**
- The American Lobster. **P1066.**
- Barnacle. **P597.**
- Understand Him, He's an Old Timer: Horseshoe Crab. **P605.**
- Waves. **P606.**
- Red Crab. **P615.**
- Phytoplankton. **P637.**
- Beaufort Wind Force Scale. **P645.**
- Zooplankton. **P651.**
- Irish Moss: Seaweed in the Home Garden. **P662.**
- Old Sea Sayings. **P800.**
- The Role of Grass Shrimp in a Tidal Marsh Ecosystem. **P833.**
- Abyss. **P858.**
- Sea Farming. **P886.**
- What is Oceanography? **P915.**
- Beach Processes in Southern Rhode island. **P923.**
- Tunicates: Animals with a Coat. **P927.**
- Brine Shrimp. **P931.**
- Boating Security Tips. **P932.**

- Eelgrass. **P934.**
- Sounds in the Sea. **P954.**
- Salt: In the Oceans and in Humans. **P955.**
- Fish Schooling. **P956.**
- Sand. **P976.**
- Tidepools. **P995.**
- The Trumpet Worm. **P996.**
- Rhode island Swans: Beauties or Beasts? **P1082.**
- Red Tide in the Northeast. **P1099.**
- Quahog. **P1123.**
- The Fishing Industry in Galilee. **P1147.**
- Hurricanes. **P1269.**
- Dealing With the Aftermath of a Hurricane. **P1270.**
- Hurricane Plan for Boaters. **P1266.**
- The Blackstone River. **P1175.**
- The Pawtuxet River. **P1187.**
- The Moshassuck River. **P1187.**
- The Woonasquatucket River. **P1189.**
- The Pawcatuck River. **P1314.**
- Zebra Mussel: An Unwelcome Visitor. **P1326.**
- Swordfish. **P1337.**

Field Management for Scuba-Related Injuries. General Interest. Thomas Platt, Kathleen Castro, Richard Moon, Phillip Sharkey. Malia Schwartz, Carole Jaworski. **P1293**. 20 pp. $4.95. Scuba-related injuries are often difficult to diagnose. This handy, easy-to-follow guide directs the general public , pre-hospital and hospital personnel on how to provide on-site treatment and collect necessary information, regardless of expertise.

Harbormaster Reference Series. General Interest. Mark Amaral and Virginia Lee, eds. Designed to assist harbormasters in meeting their expanding job roles, this series, comprising six modules, provides comprehensive reference guide for area harbormasters. The four modules now available are listed below:

- Public Rights to Coastal Waters: Applying the Public Trust Doctrine. **P1285.** 23 pp. $3.50.
- Federal Regulations: Coastal Structures, Environmental Protection and Boating Safety. **P1286.** 42 pp. $3.50.
- Rhode Island State Regulations: Environmental Protection and Boating Safety. **P1287.** 153 pp. $9.00.
- Municipal Mooring Area Management. **P1288.** 19 pp. $3.50.

Practical Twinework for Fishermen and Gear Technologists. General Interest. Joseph T. DeAlteris and Kathleen M. Castro. **P1178.** 160 pp. $5.00. Beginning with twine characteristics, this manual assists in developing the skills necessary to construct three different types of small-scale fishing gears: trawl net, gill net and fyke net. Net plans and construction of gears are described in simple, easy-to-understand language, with illustrations used to clarify descriptions. The manual is designed not only for the neophyte who has never handled a needle, but also as a teaching tool for professionals and a source for fishermen.

Plastics Forever Poster. Grades K-12/Educators/ General Interest. LaVie McDonald. **P1190.** $1.00. Plastics last indefinitely in the environment. This 11-by-17 inch, three-color poster reminds us to conserve resources and protect the planet. Printed on recycled paper.

How to Find Marine Information in Public and School Libraries. Grades 6-12. Mary Grady, ed. **P1205**. 8 pp. $0.50. Students writing term papers or doing science projects on marine topics may not realize that relevant information is available in local libraries. This brief, but through, brochure explains how to get around in the library, select a topic, search the card catalog and more.

Coastal Birds of the Northeast Poster and Brochure. Grades K-12/Educators/ General interest. Robertal Furgalack. **P1312.** $5.00. Brochure: **P1313.** 8 pp. One copy included free with poster. Additional copies, $1.00 each. This full-color, 18-by-24-inch poster depicts 16 birds that can be found along the Northeast coast. Meticulously drawn to detail. The poster is accompanied by a descriptive brochure, which provides detailed information on each of the birds, including the birds' habitat, physical characteristics, and nesting sites. Easily photocopied for classroom use.

Global Change Posters. Grades K-12/Educators/General interest. 11-by- 17-inch poster. Two for $1.00. Complete Set (all 14 poster) $5.00. Winners of the New England Global Change Poster Contest in which artists share their vision of the global change issue. Ideal for a classroom unit on global change.

- Stop Global Warming. **P1294.**
- Stop the Cutting. **P1295.**
- Save Mother Earth. **P1296.**
- Homeless Shelters for Animals. **P1297.**
- Please Don't Hurt Me. **P1298.**
- Earth in a Pollution Matrix. **P1299.**
- Closed Due to Carelessness. **P1300.**
- Stop Forest Destruction. **P1301.**
- Sea Level Rise. **P1302.**
- Acid Rain. **P1303.**
- Delicate Relationship. **P1304.**
- It's In Our Hands. **P1305.**
- Use Energy to Turn Down the Heat. **P1306.**
- Earth Could Fry Like an Egg. **P1307.**

Ordering Instructions: Send request, along with payment, to: Communications Office,
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South Carolina Sea Grant Consortium

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Charleston, SC 29401
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Sea Sampler: Aquatic Activities for the Field and Classroom. Grades K-6. Wendy B. Allen and Patty O. McLaughlin. **SCSG-TR-85-1**. 118 pp. $4.00.
A guide to successfully tested aquatic activities for the field and classroom, including how to explore a pond community, a beach, a marsh; discovering how a clam's siphons work; classifying beings and things; investigating osmoregulation and more.

Sea Sampler: Aquatic Activities for the Field and Classroom. Grades 7-12. Wendy B. Allen and Patty O. McLaughlin. **SCSG-TR-85-2**. 114 pp. $4.00.
A guide for successfully tested aquatic activities for the field and classroom, including how to set up a marine aquarium; how to conduct a beach study; classroom projects on food chain connections, brine shrimp and more.

A Guide to Common Jellyfishes of South Carolina. Grades K-12. Dale R. Calder and Margaret C. Pridgen. 12 pp. Free.
An illustrated guide to these misunderstood inhabitants of our coastal waters with information on their life history, identification and what to do if you are stung.

Red Tide: The Facts. Grades 8-12. Mel Goodwin and Virginia Beach. 11-by-17 inch poster. Free.
A handy poster for dispelling the myths and promoting the facts concerning red tide.

Coastal Heritage Newsletter. For Teachers. John Tibbetts, editor. Free.
The quarterly newsletter of the South Carolina Sea Grant Consortium featuring a wide range of topics, including aquaculture, water safety, storm water pollution, wetlands and climate change. Also includes a listing of new publications and current programs.

Reuse or Recycle: Don't Throw It All Away. Grades 3-12. Free
A checklist of innovative ways to reduce waste at home, at work and school, at the store, on weekends and in your car and yard.

Hurricane Preparation Checklists. Grades 5-12. Free.
A handout listing basic preparations, supplies and recommendations in the event of a hurricane.

A Guide to Aquatic Field Study Sites in South Carolina. Grades 6-12. Wendy Allen and Patricia S. McLaren. Illustrations by Maura Hannon Kenny. $6.00 + 8 percent sales tax.
Designed to help people locate and more effectively use the state's aquatic resources for educational purposes. Is primarily designed for educators, but can be used by anyone interested in exploring and learning more about aquatic ecosystems.

Watershed Poster. Grades 5-7. Leigh Handal. Free.
Full-color poster illustrating the common uses impacting upon a watershed in South Carolina. Also includes rain cycle and map of major South Carolina watersheds.

Plus-One Boating Poster. Grades K-12. Leigh Handal. Free.
Full-color poster illustrating the importance of maintaining litter-free waterways. Encourages recreational boaters to bring back what they take out, plus one other piece of litter found.

Plus-One Boat Decals. Grades K-12. Leigh Handal. Free.
Full-color boat decals reminding recreational boaters to bring back what they take out, plus one other piece of trash found.

Plus-One Boating Box Brochure. Grades 4-12. Leigh Handal. Free.
Instructional guidelines for constructing a Plus-One boating box.

Practice Plus-One Boating Brochure. Grades 4-12. Leigh Handal. Free.
Informational brochure featuring spokesperson Mickey Spillane.

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Teaching Marine Education in Urban Settings: "Island Explorers" Program, USC Sea Grant, Fall 1997, Program Document. Grades K-12. Free.

Wet and Wild: Six Bilingual Supplementary Marine Curriculum Guides for Teachers, K-6. Six units, each in English and Spanish, contain introduction of background information for teachers, approximately 25 multidisciplinary lesson plans in each unit and a list of reference books and films. Published by USC Sea Grant and the Evaluation, Dissemination and Assessment Center for Bilingual Education, California State University, Los Angeles.

- Unit 1: The Physical Ocean. **USCSG-ME-01-83.** 171 pp. $10.00.
- Unit 2: Ocean Management. **USCSG-ME-02-83.** 66 pp. $8.00.
- Unit 3: Ocean Research. **USCSG-ME-03-83.** 146 pp. $10.00.
- Unit 4: The Biological Ocean. **USCSG-ME-04-83.** 180 pp. $18.00.
- Unit 5: The Economic Sea. **USCSG-ME-05-83.** 150 pp. $18.00.
- Unit 6: Marine Ecology. **USC-ME-06-83.** 188 pp. $23.00.

Cross Reference for the California State Science Addendum. $1.00 (No charge with complete set).
Complete Set (Units 1-6). $85.

Tuga the Turtle. Dorothy M. Bjur. **USCSG-ME-03-82.** Grades K-6. $6.00. This children's book is in Grade Two Braille and large letters. It tells the story of a sea turtle who ends up in a tide pool and learns about tidal animals.

Mini-Information Booklets. Tidepool animals/Los animales que viven en las pozas de la marea; Sharks and Other Sea Creatures/Los tiburones y othros animales marinos. Grades K-12. **USCSG-ME-02-82.** $12.00. Each booklet in this three booklet set contains approximately 50 mini articles, both in English and Spanish, about marine animals, their characteristics and behavior.

Marine Studies Idea Book: For Teachers, Grades K-6. English or Spanish (please specify). Grades K-6. **USCSG-ME-01-82.** $8.00. A resource book of ideas and activities to assist teachers in planning lessons. Available in either English or Spanish for use in bilingual or international programs.

Dimensions of the Sea. Grades K-Graduate level. Marine education slide sets with narrative. Each set contains 35 mm color slides on the marine community and environment, accompanied by a written narrative that teachers can adapt for the appropriate level. The narrative is available in English or Spanish. Grades K-12.**USCSG-ME-04-82.** Sets include:

- The Physical Ocean. (13 slides). $11.00.
- Ocean Management. (15 slides). $12.00.
- Ocean Research. (15 slides). $12.00.
- The Biological Ocean. (22 slides). $16.50.
- The Economic Sea. (27 slides). $20.00.
- Marine Ecology. (44 slides). $33.00.
- Complete Set. (136 slides). $95.00.

Environmental Education: Making A Difference. Grades K-12. Phyllis Grifman and Jill Ladwig. Reprinted from Coastal Zone '95, Billy L. Edge, editor. Published by the American Society of Civil Engineers, pp. 282-3,1995. **USCSG-R-01-95.** $10.00.

World Wide Web Page, University of Southern California Sea Grant Program. Grades K-12. Free. USC Sea Grant Links to Marine Education and Ocean/Coastal Information (http://www.usc.edu/go/seagrant/) and Marine Education (http://www.usc.edu/go/seagrant/education.html), USC Sea Grant, 1995.

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Los Angeles, CA 90089-0373

Texas Sea Grant College Program

1716 Briarcrest, Suite 603
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Sea Sources. Grades K-12. **TAMU-SG-79-402 (rev).** 192 pp. Single copies free. Selected bibliographic and resource materials on children's literature of the sea are gathered in this useful compendium for teachers and librarians. The 192-page book includes 745 titles in 10 categories: Information; biographies/explorers; fiction; picture books; whales and sea mammals; folk and fairy tales; poetry/songs; activities; short stories and selected chapters; and bibliographies.

Aquatic Science: Marine Fisheries Biology. Grades 4-12. **TAMU-SG-92-401.** 16 pp. Single copies free.
This illustrated booklet focuses on animal life in the marine areas of Texas and can be used as a handbook for the novice beachcomber or as an educational supplement for the classroom. Information is available on waves, tides and currents; shoreline organisms; estuaries; coastal food chains; fish and shellfish identification (including descriptions and line drawings of fish indigenous to Texas waters); and special project ideas related to the life history and management of coastal organisms. A list of related materials is included. This is a revised edition of an earlier Sea Grant publication.

Children's Literature-Passage to the Sea. Grades K-7. **TAMU-SG-80-401.** 56 pp., 4 questionnaires. $2.00.
This marine awareness learning package is based on eight books by nationally recognized authors. At least one book is appropriate for each elementary grade and all have a sea or coastal setting. Each book is related to interest center activities that allow students to experiment with or express what they have learned. Complete directions for 39 activities are included; related to language arts, music, art, science and social studies.

Marine Organisms in Science Teaching. Grades 4-12. **TAMU-SG-80-403.** 192 pp. $4.00.
This laboratory-oriented workbook includes 42 activities for using living marine organisms in existing science programs. The workbook is presented in a discovery type format that includes two sections for the teacher, a pre-lab and post-lab, and a student investigation section. Student sections are formatted to allow easy duplication on school copying equipment. The activities use organisms such as brine shrimp, oysters, ghost, fiddler and hermit crabs, sea anemones, barnacles and sponges.

Fairy Tales of the Sea. Grades K-12. **TAMU-SG-81-402.** 152 pp., 9 original illustrations. $4.50.
This collection of fairy tales includes tales from every inhabited continent - America, Asia, Australia, Europe and Africa - so that American children (and adults) can enjoy their varied heritage. It is believed that the collection is the only volume of international folk and fairy tales exclusively about the seas. The tales, 25 in all, range from the familiar - such as Hans Christian Anderson's The Little Mermaid - to the lesser known - such as Pearl Buck's adaptation of The Flying Ship. The book is designed in an easy-to-read format for even the youngest readers to enjoy the fairy tales. While the collection is complete in itself, there is an accompanying teacher's guide. (**TAMU-SG-81-403**) that suggests varied classroom uses.

Fairy Tales of the Sea Teacher's Guide. Grades 4-9. **TAMU-SG-81-403.** 28 pp. $2.00.
The communication potential of Fairy Tales from the Sea lends itself to a language arts curriculum. This guide is written with objectives according to the English Language Arts Curriculum Framework suggested by the Texas Education Agency. Activities cover the language arts of listening, reading, speaking and writing. Although designed for grades four through nine, there are some activities suitable for younger or older students who are particularly motivated toward the study of the sea.

Marine Education - A Seagoing Educational Experience. Grades 7-12. **TAMU-SG-83-401.** 28 pp., 3 data sheets. $1.50.
This workbook was prepared as part of a working cruise program for high school students and teachers that is offered by The University of Texas Marine Science Institute at Port Aransas. The book may be useful to high school and junior college science students and teachers who have access to a research vessel. Included are descriptions of the Corpus Christi Bay area and the study sites, field equipment, analytical procedures and data collection. Detailed instruction for onboard activities are given.

Life on Board American Clipper Ships. Grades 7-12. **TAMU-SG-83-402.** 36 pp., 3 photographs, 2 drawings. $1.00.
Author/archivist Charles Schultz has relied on sailors' actual diaries and logs kept by clipper ship captains. The book also includes an introduction that defines the clipper ship era, suggestions for further reading and a glossary. Photographs of American-built clipper ships supplied by Mystic Seaport Museum, are included, as is a redrawing of an 1985-era world chart that shows the major routes followed by clipper ships. In addition to its interest to the general reader, this book is intended to supplement English or American history classes in grades 7 through 12. It can also be used with younger, gifted students.

Bird Island Basin Environmental Study Area. Grades 7-12. **TAMU-SG-86-401.** 36 pp. $2.00.
The concept of environmental study areas was a direct outgrowth of the 1970s ecology movement. The idea was to designate specific areas where school groups, youth groups or others could enjoy a directed study experience in the field and where specific ecological principles could be demonstrated. The Bird Island Environmental Study Area, located at Padre Island National Seashore, is just such a place. This guide contains a number of exercises that are designed as points of departure for hands-on learning experiences. Most of the activities are presented in a format similar to high school-level laboratory experiments. Although written with the Bird Island Basin area in mind, they can easily be adapted to other environments. Many of the activities can be done on the school lawn, on the playground or in a nearby park.

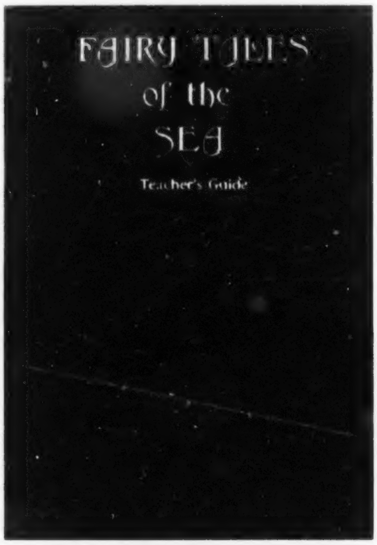
Annotated Guide to the Barnacles of the Northern Gulf of Mexico. Grades 9-12. **TAMU-SG-86-402.** 36 pp. $3.00.
The 49 species of the thoracic barnacles (the goose and acorn barnacles) that are known to occur in the northern Gulf of Mexico are differentiated by a taxonomic key based on external character, with extensive illustrations and a glossary. This guide also includes an annotated list of these species and three systematically questionable ones, with a real range, bathymetry, substratum type and other data; a list of 16 species that have been found in the southern Gulf of Mexico but not in the northern Gulf of Mexico; directions for collecting and examining specimen, and a list of references especially useful for further study of particular groups.

Questions About Careers in Oceanography. Grades 7-12. **TAMU-SG-87-401r.** 18 pp., 5 photographs. Single copies free.
A handy guide to the field of oceanography, this booklet is a response to inquiries by young people considering a career in the discipline. Questions such as "What is an oceanographer?," "Where does one study oceanography?," and "Who hires and supports oceanographers?" are posed and answered. Additional sources of information are sighted in the text, and complete addresses for these agencies and organizations are provided.

Vocational-Technical Marine Career Opportunities in Texas. Grades 7-12. **TAMU-SG-80-402r.** 22 pp., 7 photographs. Single copies free.
This booklet is to assist high school counselors, teachers and students better understand the career opportunities available in the Texas marine industry. It provides background information and description of jobs in the maritime transportation, offshore mineral, oil and gas, commercial diving, commercial fisheries and shipbuilding industries. Information about the training needed to enter particular positions is also included. Organizations and schools, with addresses, are listed at the end of each section for reference.

How to Set Up and Maintain a Saltwater Aquarium. Grades 3-12. **TAMU-SG-81-504.** 8 pp., 7 illustrations. Single copies free.
This pamphlet outlines the basic steps to establishing a saltwater aquarium anywhere in the country. Presented in as simple language as possible, with accompanying cartoon illustrations, the guide is designed for young children, but is equally useful for older children and adults. Detailed instructions are given on the materials needed, food preferences, synthetic saltwater, filter systems and potential problems.

Hurricane Warning! Grades K-7. **TAMU-SG-82-401.** 12 pp. Single copies free.
Owlie Skywarn talks about hurricanes in a style written for elementary students. Printed in large type for easy reading, the brochure tells of



Hurricane Camille in a story form and includes a checklist of do's and don'ts when a storm threatens. There is also a safety certificate (to be signed by a teacher or other adult), signifying that the student knows the appropriate safety rules.

Water: How Safe Are You? Grades 4-12. **TAMU-SG-87-402r.** 8 pp. Single copies free. As the weather turns hot, there is nothing as inviting as the thought of cool water and swimming, skiing, boating, fishing or just lazing away the afternoon. Each year in Texas an average of 650 people get so involved in their activities that end result is death by drowning. Since most victims are teenage males between 15 and 19 years old, this bulletin points out some of the more obvious, but often forgotten, safety practices. Written primarily for a teenage audience, it covers swimming, river recreation and boating. It includes a list of reference brochures, films, books and courses that can be used supplement water safety instruction.

Field Trips...Logistics is Key to It All. Grades 7-12. **TAMU-SG-83-403.** 4 pp. Single copies free. Science field trips provide opportunities for students that can make the teacher's work well worth the effort. The excursion allows students to see and experience things they have never seen or felt before, and creates a hands-on approach to study. To be successful a field trip must be thoroughly planned. This monograph provides teachers with detailed, step-by-step guidelines to follow in planning a field trip, taking one and following it up in the classroom. Post-trip evaluation guidelines and references are also included.

Gulf of Mexico Repair Kit. Grades 7-12. **TAMU-SG-96-505.** 16 pages, 16 color illustrations. Single copies free. Contrary to what many people think, dangers to the Gulf of Mexico came not from major industrial operations or shipping accidents but from fertilizers, pesticides, motor oil and garbage that run off lawns and streets first into storm drains and ultimately into area stream, bayous and canals. This postcard-size flip chart, based on an earlier publication by the Tampa Bay National Estuary Program, offers the general public quick tips on landscaping, water conservation, native shrubs and trees, hazard-free cleaning supplies, and debris-free boating. Household chemical collection days are listed for the five Gulf states.

Protecting Marine Mammals. Grades 7-12. **TAMU-SG-93-401.** 6 panels, 7 color photographs. Single copies free. The playfulness and beauty of marine animals in the wild are natural attractions for humans. The attraction is proving deadly for some species. This six-panel brochure describes the inherent dangers of humans getting too close to whales, dolphins, porpoise, seals and sea lions and offers tips on how to enjoy the sight of the animals while still protecting them.

NOAA
Protecting Marine Mammals
Look
from a distance ...
but don't touch, feed or harm in the wild

A Guide to Planting Seagrasses in the Gulf of Mexico. Grades 10-12. **TAMU-SG-94-601.** 28 pp., 6 color photographs, 6 illustrations. Single copies free. Seagrasses form one of the most productive plant communities on the planet. They provide valuable and virtually irreplaceable habitat for numerous recreational and commercial fishery organisms as well as their prey. Tremendous losses of this habitat have occurred in the Gulf of Mexico as a result of coastal development. Losses to seagrass habitat may be slowed or even reversed through properly planned and executed planting projects. This handbook was developed to guide agency personnel and private consultants involved in wetland permitting, mitigation and restoration through successful completion of these projects.

Hurricane! Grades 7-12. **TAMU-SG-96-503.** 7 black and white illustrations. Single copies free. This bilingual publication is designed to make you think - and plan - before the threat of a hurricane occurs. It includes step-by-step instructions for hurricane preparation and evacuation plans, a tracking chart and suggestions for recovery after a storm. Hurricane! provides a glossary of terms and teaches what storm surge is and how it can sometimes be more damaging than the storm itself. Discover, too, how tornadoes and hurricanes are related.

Venomous Marine Animals. Grades K-12. **TAMU-SG-97-401.** 25-by-19 inch poster. $3.00.
Ten categories of potentially dangerous marine organisms are illustrated on this poster - jellyfish, catfish, rays, sea urchins, toadfish, stargazers, worms, sponges and the octopus. The accompanying descriptions can help people to become more aware of how problems with these animals might develop, how they can be avoided and how certain injuries should be treated if they occur.

Whales and Dolphins Off the Texas Coast. Grades K-12. **TAMU-SG-84-505.** 36-by-23 inch poster. $3.00.
This poster depicts the five species of whales and dolphins most frequently stranded along the Texas coast. This is a full-color reproduction of a specially commissioned work by artist Lori Grassman. The Atlantic bottle-nosed dolphin, spotted dolphin, pygmy sperm whale, and great sperm whale are included, along with a brief description of each species.

Texas Rips! Grades K-12. **TAMU-SG-84-506.** 11-by-17 inch poster. Single copies free.
This water safety poster delivers a warning message about dangerous rip currents along the Texas coast. A high percentage of drownings occur each year when swimmers or waders are caught in rip currents adjacent to rock groins, jetties or piers. The poster also includes a description of how to escape a rip current should a person be caught.

A Garden in the Gulf: Flower Garden Banks National Marine Sanctuary. Grades 7-12. **TAMU-SG-92-102.** 34-by-22 inch poster, 16 color photographs. $3.00.
This poster intended for both the general public and the classroom tells the story of the Flower Garden Banks, the habitats, the problems created by humans and the protection offered by National Marine Sanctuary status. Each bank includes different biotic zones, which are described and illustrated on the poster. Activities that will now be regulated are itemized on the back of the poster, and a general description of the National Marine Sanctuary Program is included.

Look...From a Distance...But Don't Touch, Feed or Harm in the Wild. Grades K-12. **TAMU-SG-93-402.** 11-by-17 inch poster, 2 color photographs. Single copies free.
This poster, designed to be displayed at marinas and charter boat docks or in bait houses, is a reminder to the general public to keep a distance between themselves and the naturally sociable dolphins, porpoise, seals, sea lions and whales. The emphasis is on enjoying the sight of the animals while ensuring their safety.

Texas Shores. Quarterly magazine. Free subscription available for in-state residents; $7.50 for out-of-state residents.
This 28-page thematic magazine examines issues affecting the Texas marine environment in detail. While the focus is on the Texas coastal environment, many of the issues are similar to those faced by other regions of the country.

A Second Chance for South Bay. Grades 7-12. VHS format. 15 minutes. $5.00.
This video addresses the first bay to be designated part of the Texas Coastal Preservation Program. South Bay is one of three hypersaline lagoon systems in the world.

Hooked on Seafood. Grades 7-12. VHS format. 33 minutes. $20.00.
If fear of failure keeps you from cooking seafood at home, this entertaining and educational video provides a step-by-step guide to success. Designed for home economics classes, the video reveals the secrets to buying and preparing quality fish and shellfish. Quick, easy-to-prepare recipes are also demonstrated on this handy reference for the novice as well as the seasoned pro.

Don't Mess With Texas Beaches. Grades 7-12. VHS format. 20 minutes. $10.00.
This educational video helps students and teachers alike understand the cost of ocean dumping in terms of marine life and the actual cost of cleaning the state's beaches.

Balancing Act. VHS format. 15 minutes. Grades 7-12. $5.00.
This documentary explains the purpose of the new Galveston Bay National Estuary Program and illustrates the many uses of the Bay and the need for a comprehensive management plan. By examining the two latest editions of Texas' Coastal Preserve Program, Christmas Bay and Armand Bayou, the viewer learns more about the biological significance of wetlands and water quality and the problems confronting Galveston Bay as a whole.

Texas Shores - Saving What's Left. Grades 7-12. VHS format. 27 minutes. $10.00.
Increasing shoreline erosion has Texas officials worried about the stability of the land and the coastal economy. the video explains what erosion is, what causes it, the effects, and both historic and contemporary solutions. It also shows the environmental and economic aspects of erosion that make it a statewide problems rather than just a coastal one.

Saltwater Aquarium. Grades 5-12. VHS format. 16 minutes. $5.00.
An instructional video on the creation and care of a saltwater aquarium. The program

covers curing the tank, water quality, testing procedures and the do's and don'ts of home-based aquaculture.

Flower Garden Banks National Marine Sanctuary. Grades 7-12. VHS format. 9 minutes. $20.00.
The Flower Garden Banks, the northernmost coral reefs on the continental shelf of North America, became a National Marine Sanctuary in 1991. Located more than 100 miles off the coast of Texas and 50 feet below the sea's surface, the East and West Banks serve as a regional reservoir of shallow-water Caribbean reef fisheries and invertebrates. This video, co-funded by NOAA's Sanctuaries and Reserve Division and Texas Sea Grant, highlights the location and problems observed at the Banks, and describes what is being done to protect the Sanctuary. A full-color informational brochure accompanies the video, and an educational poster is available.

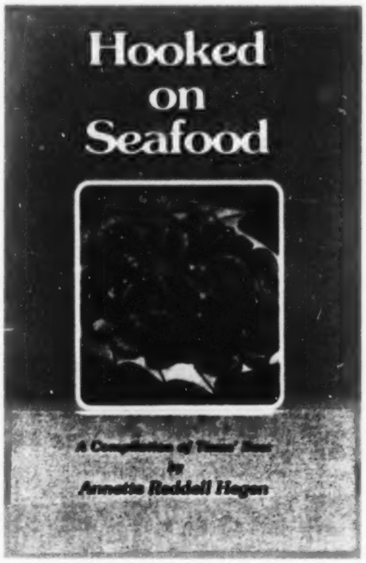
Reef Romance...The Flower Gardens. Grades 7-12. VHS format. 12 minutes. $5.00.
The second part of the Flower Gardens video package examines the perpetuation of life at the Banks and highlights many of the types of spawning activities found in the Sanctuary each fall.

Environmentality: Learning to Share Our World. Grades 7-12. VHS format. 56 minutes. $5.00.
An educational satellite uplink program produced by The Louisiana Educational Resource Network and cosponsored by the Texas Sea Grant College Program, Walt Disney World's EPCOT Center, Sea World of Florida, Southern University, Save the Manatees Foundation and the Louisiana Systematic Initiative Project. The video uses the manatee to exemplify how the planet Earth is a fragile place.

The Year of the Gulf Musical Science Tour Environmental Troubadours. Grades 2-7. VHS format. 20 minutes. $5.00.
A journey spanning the coast of America's sea is featured. Listen to the songs of Bill Oliver and Glen Waldeck while viewing the children and scenery of the five states that border the Gulf of Mexico. All the songs performed have an environmental theme as the duo shows some of the problems encountered along with some possible solutions. The video targets young ages, but can be enjoyed by all.

Have Fun! But Know the Dangers of the Beach. (¡Diviértase! Pero Conozca los Peligrosde la Playa). Grades 7-12. 16 panels. **TAMU-SG-81-505(r).** single copies free.
Swimming is the number one recreational activity in Texas, but it also accounts for nearly half the water-related deaths in the state each year. This 16-panel brochure details some of the precautions that apply in any water, beginning with the most obvious, learning to swim. The bilingual text also covers rip currents, sand bars and holes, and stings, bites, burns, and cuts. Emergency medical telephone numbers are listed for each part of the Texas coast.

These Dunes Aren't Made for Walking. Grades K-12. 15-by-11 inch poster. **TAMU-SG-94-402.** Single copies free.
This poster teaches the importance of dune life on the beach, stressing although dune plants tolerate harsh beach conditions - wind, salt, spray, overwash of waves, scarce nutrients, limited freshwater, intense sunlight, and extremes of hot and cold - they cannot withstand the pounding of feet and vehicles. Because dunes help protect property and land from hurricanes and strong winds, preservation is important.



Who's for Dinner? and Who Eats Whom? Grades 7-8. Card Games. **TAMU-SG-79-401.** $1.00.
This set of 48 marine organism cards are instructional as well as entertaining and can be used for two games. Printed on card stock and shipped flat.

Ordering Instructions: Make checks payable to Texas A&M University. Send check or official purchase order to: Texas Sea Grant College Program, 1716 Briarcrest, Suite 603, Bryan, TX 77802

Virginia Sea Grant College Program

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Virginia Institute of Marine Sciences
Gloucester Point, VA 23062
(804) 642-7170

Virginia State Parks...Your Backyard Classrooms. Grades K-12. Irvine Wilson, Nancy Balcom and Frances Lawrence. **VSG-90, VIM-ES-38-EE-97.** 200 pp. Currently available on-line (only selected activities) at (www.whro.org/bl/)
This publication gives educators instructional materials to use for Chesapeake Bay fieldwork, and provides a wide selection of teaching ideas for use in Virginia's state parks. Each of the teacher-friendly lesson plans includes: A concise background section, describing key scientific, historical and environmental concepts; a step-by-step procedure that begins and ends in the classroom; lists of necessary materials, objectives and resources; a description of the most suitable location in coastal Virginia State Parks for the activity; and a cross-reference to the Virginia state instructional objectives for science and social studies.

Rally Round. Grades 5-7. Virginia Bay Team. **VIMS-ES-40.** 80 pp. Distributed through Sea Grant teacher training workshops.
Upper elementary and junior high school students often feel strongly about environmental issues, but lack the skills and information necessary to take responsible and appropriate action. Rally Round is a tool for teachers and students grades 4-7 to use in channeling this interest and enthusiasm into productive learning experiences which result in positive environmental outcomes. Projects provide a structured approach to open-ended problem solving: Teachers serve as facilitators and advisors, and students have a real world experience in defining and assessing problems. Participating teachers receive a copy of the handbook, a brief, concentrated on-site training seminar, an introductory classroom lesson taught by the Bay Team, and year-round advisory support services. Supplemental extended inservice training sessions are available upon request.

Virginia Environmental Education Resources Directory. Grades K-12. **VIMS-ES-42-2-EE-95.** 80 pp. Currently available on-line only at (www.deq.state.va.us/deq/eedir.html).
The directory contains information about 80 environmental education organizations and agencies and over 250 individual entries about products and services they provide. The directory is organized by topic (e.g., waste management/recycling, global issues and marine and aquatic resources) and each chapter is introduced by a brief summary of current issues for the topic. The directory is cosponsored by the Virginia Environmental Endowment, the Department of Environmental Quality, Virginia Sea Grant College program, the Chesapeake Bay National Estuarine Research Reserve, the Virginia Resource Use Education Council and the Virginia Department of Education.

VIMS Bay Team Teacher Advisory Series. VSG-96-01, VIMS-ES-43-EE-96, 97. All titles available on-line at (www.vims.edu/adv/pubs), some titles also available in hard copy.
One page each. All titles available on-line at (www.vims.edu/adv/pubs/), some titles also available in hard copy.

- Virginia Field Trip Sites for Marine and Aquatic Education. Grades K-12. **VSG-96-01, VIMS-ES-43-1-EE-96.**
- Materials for Teaching Young Students about the Chesapeake Bay and the Marine Environment. Grades K-5. **VSG-96-01, VIM-ES-43-2-EE-96.**
- Materials for Teaching Middle and Secondary Students about the Chesa peake Bay and the Marine Environment. Grades 6-12. **VSG-96-01, VIMS-ES-43-3-EE-96.**
- Discussion Lists for Marine Educators. Grades K-12. **VSG-96-01, VIMS-ES-43-4-EE-96.**
- Virginia Summer Programs for Students in Marine Science, Environmental Science and Maritime Heritage. Grades 4-12. **VSG-96-01, VIMS-ES-43-5-EE-96.**
- High School Lab Activities in Benthic Ecology. Grades 8-12. **VSG-97-01, VIMS-ES-43-6-EE-97.**

Invasion of the Exotic Species: Stop the Zebra Mussel! Grades 7-12. Vicki Clark and Tom Miller. **VSG-94-03, VIMS-ES-41-94.** 28 pp. $3.00.
This teaching package provides resources for teaching students in grades 7-12 about zebra mussels and general exotic species issues. In the introductory activity, students analyze data from nine different Virginia lakes and rivers to determine areas at greatest risk for invasion by zebra mussels. Problem-solving activities can be adapted for use with data from other areas. Students are challenged to use the scientific data and other information to design action plans to help prevent the introduction and spread of zebra mussels. Follow-up activities encourage the study of the impact of other non-indigenous organ-

isms. Included in the package are 10 additional Sea Grant publications from the mid-Atlantic and Great Lakes regions with background information on zebra mussels and related research.

The Marine Turtles of Virginia. Grades 8-12. J.A. Musick. **Educational Series No. 24.** 22 pp. $2.00.
The marine turtles are among the most interesting representatives of Virginia's migratory marine fauna. They include the leatherback (the world's largest living reptile) and four species of hard-shelled sea turtles. The latter are represented by the very large and common loggerhead, the much smaller, less common Atlantic ridley, the rare Atlantic green turtle and the Atlantic hawksbill. This booklet identifies Virginia's marine turtles, describes their habitat, distribution and nesting.

The Chesapeake: A Boating Guide to Weather. Grades 8-12. Jon Lucy, Terry Ritter and Jerry LaRue. **Educational Series No. 25.** 22 pp. $1.00.
A more ideal boating area than Chesapeake Bay would be difficult to find along the Atlantic Seaboard. With thousands of miles of sheltered shoreline, good water depth and proximity to major urban centers, the Bay is a boatman's paradise. However, the Bay's many protected harbors and relatively narrow width (a boatman can normally keep one shore in sight at all times) tend to produce a feeling of false security about the need to keep close watch on weather conditions. The purpose of this publication is to remind boatmen that the Bay has many different moods, some of which can change quite rapidly. In addition, it should promote a better understanding of how basic weather features develop on the Bay and enable boatmen to enjoy the Chesapeake's unique waterways with fewer weather surprises.

Handle With Care: Some Mid-Atlantic Marine Animals That Demand Your Respect. Grades 8-12. Jon Lucy. **Educational Series No. 26.** 13 pp. $1.50.
Generally speaking, the marine organisms found along the middle Atlantic shores are not considered threatening to people. However, some of these animals can cause problems, either upon simple contact with the skin, as in the case of the jellyfish, or through careless handling. Larger inhabitants of coastal waters, such as stingrays and sharks, must always be treated with great respect because of the danger potential and their unpredictable nature. This description of nuisance and potentially harmful organisms is presented to help coastal residents and visitors become more aware of how problems with such marine animals might develop, how they can be avoided and how certain injuries should best be treated if they occur.

Fishy Activities for Your Small Fry. Grades K-6. Mary E. Sparrow. Frances L. Lawrence and Ronald N. Glease. **Educational Series No. 28.** 36 pp. $3.00.
This kit is a collection of fishy ideas for use in your classroom. The ideas in this kit are diverse in nature and complexity. Select and adapt objectives and activities to meet your interests, capabilities and grade level of your students.

The Marine Mammals of Virginia. Grades 8-12. R.A. Blaylock. **Educational Series No. 35.** 34 pp. $1.00.
To aid citizens in identification, this guide describes the natural history of marine mammals. This guide is organized by taxonomic orders and families; within a subfamily, species are listed by their frequency of appearance in Virginia waters. Space limits descriptions of the species' habitats and distributions to the western north Atlantic.

Ordering Instructions:
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BAY TEAM
Invasion of an Exotic Species: Stop the Zebra Mussel!
Activities and Resources For Grades 8 - 12
Virginia Sea Grant Marine Advisory Program

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Madison JASON Web Site. An Integration of Science, Education and Technology. (www.seagrant.wisc.edu/madisonjason). Grades 4-8. Modern communications technology offers exciting new ways to engage students in science as well as provide professional development for their teachers. Wisconsin Sea Grant developed the "Madison JASON" web site on behalf of more than 2,000 4th- through 8th-grade Madison-area students and their teachers who are participating in the JASON Project, an international, interdisciplinary science education program that uses state-of-the-art technology to enable students to see and talk with scientists and researchers doing field work in remote locations in the world. This web site, winner of two prestigious Gold Medals from the national Council for the Advancement and Support of Education, features audio clips, interactive quizzes, guides to teacher resources, and student art and projects. It has been praised as a national model by JASON Project organizers. The site includes:

- **Madison JASON '96 (www.seagrant.wisc.edu/madisonjason[illegible]/)**: Field investigations in southern Florida focusing on the Everglades, Florida Bay, Florida Keys and relic reefs. Wisconsin field investigations focus on local wetlands.
- **Madison JASON '97 (www.seagrant.wisc.edu/madisonjason8)**: Field investigations in Iceland and Yellowstone National Park focusing on the relationships among glaciers, volcanoes and migratory birds. Wisconsin field investigations focus on Great Lakes migratory birds often seen in the wetlands.
- **Madison JASON IX (www.seagrant.wisc.edu/madisonjason9)**: Field investigations in Bermuda, Monterey Bay, and the East Pacific Rise focusing on kelp forests, marine snow, coral reefs, hydrothermal vent communities, and exotic deep sea creatures. Wisconsin field investigations focus on local aquatic ecosytems.

Fish of Lake Michigan. (www.seagrant.wisc.edu/communications/publications/fish/index.html). Grades 4-12. 32 pp. $0.50. A history of the Lake Michigan fishery and illustrated descriptions of 21 important species of fish.

The Coasts of Wisconsin. Grades 8-12. 34 pp. $0.50. Describes the physical characteristics, history and early development and current uses and problems involving Wisconsin's Lake Michigan and Lake Superior coasts.

The Sea Lamprey: Invader of the Great Lakes. Grades 8-12. 8 pp. $0.50. Describes one of the most devastating ecodisasters in modern history - the invasion of the Great Lakes by an ancient parasitic ocean fish.

Green Bay: Portrait of a Waterway. Grades 6-12. 21 pp. $0.50. A collection of stories on the importance of Green Bay resources that originally appeared in the Green Bay Press-Gazette Newspaper in 1978.

Green Bay's Yellow Perch Fishery. Grades 8-12. 10 pp. $0.25. An illustrated history of this major Green Bay fishery, its recent problems and attempts to improve it.

Ordering Instructions: Please add $1.00 for postage and handling. Orders under $20 must be prepaid. Make checks or money orders payable to the UW-Sea Grant Institute and send to: Communications Office
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The Sound: Puget Sound Multimedia CD-ROM. Grades K-12. Robert T. Miyamoto and Patricia M. Hardisty. 1997. Index, user's guide. **WSG-AV 97-01.** $29.95
Designed as a reference for home and school use, this CD-ROM contains more than 500 megabytes of digital text, photos, video, animation and sound. Each of its 36 information modules contain answers to hundreds of questions on Puget Sound processes, ecosystems, species, recreation, tribal culture, environmental solutions, and more. Includes games, index, references and web links. Works on both PC and Macintosh platforms.
PC System Requirements: Windows 3.1, 95, and NT; 8 MB RAM (16 MB preferred); 2X CD-ROM drive or faster; Mouse and sound card; Color monitor (256 colors); QuickTime for Windows™ (provided)
Macintosh System Requirements: System 7.0 or newer; 8 MB RAM (16 MB preferred); 2X CD-ROM drive or faster; Color monitor (256 colors); QuickTime™

Woods Hole Oceanographic Institution

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All About Oceanography: A Fun-Filled Activity Book. Grades K-12. Tracey I. Crago and Lee Anne Campbell, eds. E. Paul Oberlander, illustrator. **WHOI-E-92-002.** 32 pp., $2.00. (quantity and educator discounts available).
Not just your average coloring book, All About Oceanography features factual information and illustrations depicting various disciplines oceanography. The book, highlighting research conducted at WHOI, also includes interesting oceanography trivia, crossword and word search puzzles and a comprehensive glossary. Examples of subject areas covered include: hydrothermal vent communities, marine exploration through the ages, the use of satellites in oceanographic research, the Gulf Stream, erosion, marine mineral deposits, aquaculture, red tide, cetaceans, exploring historic shipwrecks and much more. Useful for any age, the book can be used as a coloring book, a reference book or both.

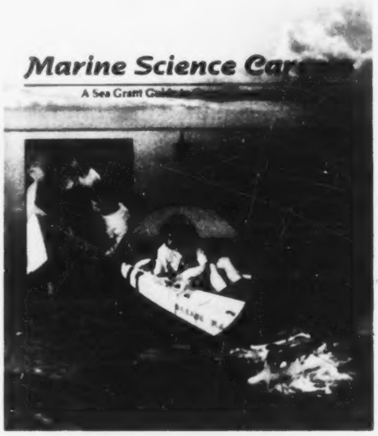
Field Guides for New England Marine Environments. Grades K-12. Barbara Waters and Carole Eldridge. Set of five, $3.00. *Due to the size, please add $2.00 postage. If ordering 10 sets or more, call (508) 289-2398 to inquire about quantity discounts. Recently updated and reprinted by popular demand, this set of five field guides includes: "Salt Ponds," "Tidal Flats," "Rocky Shores and Wooden Structures," "Sandy Shores and Dunes," and "Salt Marsh." These oversized, 11-by-17 inch guides describe the characteristics of each environment, and include the plants and animals that inhabit it, identified by both common and scientific names. Coated to help withstand years of use in the classroom or in the field.

Marine Science Careers: A Sea Grant Guide to Ocean Opportunities. Grades 7-12. Steve Adams and Tracey Crago. **WHOI-E-96-001.** 40 pp. $5.00.
A new publication geared for junior high and high school students interested in pursuing a career in a marine science-related field. The 40-page guide is also useful for college undergraduates, middle school students and the parents, educators and guidance counselors who will be helping them plan their futures. Marine Science Careers was compiled by Sea Grant as a guide to the possibilities and probabilities in this field for today and the years to come. The guide focuses on four major career areas: marine biology, oceanography, ocean engineering and related fields. It contains question-and-answer profiles and photos of 38 marine scientists and other professionals from around the country, who represent a wide range of specialties, geographic locations, employment situations and educational backgrounds.

Oceanography Reading List. Grades K-Undergraduate. **WHOI-L-95-002.** 52 pp. $2.00. (Previously issued in two versions: young students and adults) The Office of the Woods Hole Oceanographic Institution/Marine Biological Laboratory Research Librarian recently updated and compiled the information into one publication. The new bibliography lists oceanography reading materials, films, videos and on-line research by category. Publications suitable for young students are so noted.

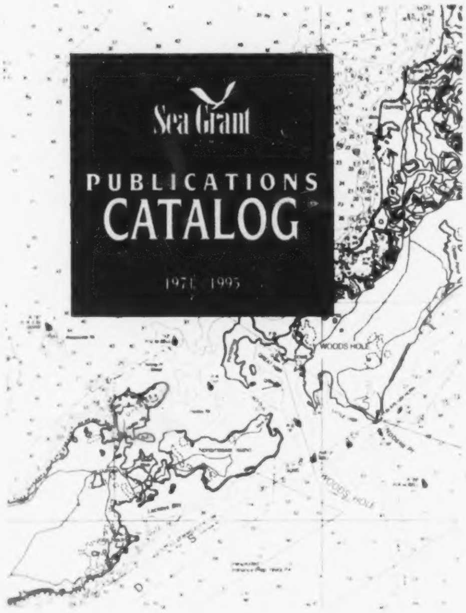
Raindrop Journey Poster. Grades K-12. John F. Waters and Barbara S. Waters. Single copies free.
This poster follows the journey of a raindrop once it falls from the sky and into a pond on Cape Cod, Massachusetts. the story follows the raindrop through swamps, streams, rivers, wetlands and finally to an estuary. The reverse side of the poster provides information on the Waquoit Bay watershed, including a diagram of the area.

Videos Available for Loan or Purchase. Grades 7-Undergraduate. Video presentations form WHOI Sea Grant's popular lecture series "Oceans Alive: Plain Talk on Current topics in Marine Science Presented for the General Public," all approx. 60 minutes, are available on a one-week loan basis for $3.00 or for purchase at $10.00 each. The 1997 series included the following presentations: **"Student Science in Falmouth,"** featuring science fair winners from the local high schools; **"Science**



Where You'd Least Expect It," in which panelists shared their experiences teaching science or technology to nontraditional audiences, such as displaced fishermen, Elderhostel participants, rural communities in Brazil's Amazon Basin, and at-risk students in AIDS and HIV education; and "Science Bloopers and Blunders," which featured world-renowned scientists who shared some of their "mistakes" that resulted in significant discoveries or life lessons that they have turned into scientific or career gains. Contact WHOI Sea Grant for a list of other "Oceans Alive" videos, beginning with the 1993 series.

WHOI Sea Grant Publication Catalog, Grades 7-Undergraduate. WHOI-L-96-001. 1971-1995. 180 pp. $2.00 postage.
This catalog includes all publications supported by WHOI Sea Grant since the program's inception and features an annotated bibliography. Publications are organized by research area, with documents useful for teachers and/or students so designated. Order forms are included in the catalog.



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WHOI Teacher Packet. Grades K-12. **WHOI-E-96-002.** Single copies free.
WHOI is a private, non-profit research facility dedicated to expanding the frontiers of knowledge about the marine world. Most of the funding at WHOI supports its mission of research and higher education (graduate and post-graduate levels). In addition, as resources permit, the Institution's Education, Information and Sea Grant Offices, as well as the joint Marine Biological Laboratory/WHOI Library, prepare outreach and curriculum materials for elementary, secondary and continuing adult education. In response to the high volume of requests for teaching materials from educators, staff from several of the WHOI outreach offices, including Sea Grant, created a packet of educational materials. To receive a teacher packet, you must be an educator (formal or informal) at a school or organization where a program or coursework in marine science and/or oceanography is offered.

Women in Marine Science: Good Girls Don't. Grades 7-Undergraduate. Lee Anne Campbell. **WHOI-R-90-001.** 6 pp. $1.00.
Though women have succeeded in breaking into many previously male-dominated fields in recent years, it is still unusual to find them in science and technology careers; at the time this article was written, women earned only 16 percent of the doctorates in physical science, 10 percent in computer science and 7 percent in engineering. This article, which originally appeared in the Fall 1990 issue of Nor'easter magazine, describes some of the specific trials faced by women in science, as well as the changes taking place in attitudes and institutions. This article also stresses the need for recruiting more women to the sciences. The personal stories presented here illustrate the wide variety of marine science careers that exist and the uniqueness of the women who pursue them.

Ordering Instructions:
Please add 50¢ per item for postage, max. $3.00. Make checks payable to WHOI

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